

Sierra Harris:

I think that just the amount of energy and support that's out there, the amount of people I've met that I never would've met otherwise working on climate things has really inspired me because even though it's a big heavy topic, and it seems some days like, what are we even doing here? People just have great resiliency and great ideas, and there's always a way that we can sort of think about how to look at it differently, and I've just been really excited about that.

Kristin Oxford, Host:

Hello there. Thank you so much for joining us on The Voices of Greater Yellowstone, where we share the stories and science of the Greater Yellowstone Ecosystem. I'm your host, Kristin Oxford. We've been on a bit of a hiatus this summer as our team focused on the Greater Yellowstone coalition's ambitious and urgent effort to stop a gold mine from being developed on the border of Yellowstone National Park. If you'd like to learn more about that, go check out episode 15 of this podcast. As that campaign nears its close, we're so grateful to be back in podcast land and exploring more exciting Greater Yellowstone stories with you.

We know Greater Yellowstone is a remarkable ecosystem. It's also an increasingly vulnerable ecosystem. The impacts of climate change on this landscape can be felt far and wide, and are showing up in some surprising ways. As the impacts of climate change put our communities, water, and wild lands at risk, GYC is working alongside diverse partners and stakeholders to better understand climate-related threats, prepare for a warmer, drier future, and protect our most climate sensitive resources.

On today's episode, we're sitting down with GYC's Climate Conservation Coordinator, Sierra Harris, to learn about her work in climate resiliency. Most recently, she finished a series of interviews with folks on the ground across Greater Yellowstone to get a sense of the climate change impacts people are seeing in real time. With Sierra, we'll also unpack some of the dynamics between weather and climate here, what brought her to climate work in the first place, discuss some things average people can do to make their communities more resilient, and learn why you probably shouldn't go fishing when it's hot outside. But most of all, we'll talk about how one of the most important things you can do about climate change is simply to talk about it. All right, with that, let's hop into global weirding and climate conversations.

Sierra Harris:

Hi, I am Sierra Harris, and I am the Climate Conservation Coordinator for the Greater Yellowstone Coalition. And what do I do? I work on climate and adaptation and resiliency issues across the Greater Yellowstone Ecosystem.

Kristin Oxford, Host:

Great. Tell us a little bit about your journey. How did you find yourself working on water and climate issues with the Greater Yellowstone Coalition?

Sierra Harris:

Well, I never in my million years would've said I'd end up in climate change work, but it was a pretty natural progression. About 15 years ago, I started working in the Upper Missouri Headwaters as a water program manager, and realized quickly that water pretty much was the problem that we were going to see with climate change. Running out of it, too much of it, what do we do with it? So slowly I just migrated over to, yeah, everything we do in conservation has to be thinking through the lens of climate change.

Kristin Oxford, Host:

Yeah, that makes sense. And what do you do for fun when you're not working?

Sierra Harris:

Well, I spend as much time as humanly possible outside just hiking and camping, running with my dog, gardening, you name it. Summer is short and sweet here, so

Kristin Oxford, Host:

That is true. We're really feeling that acutely right now as we cruise through September. So climate change is a really big topic to try to cover in a short podcast episode, and frankly, it can be really daunting to talk about at all. So let's just start with the basics. How would you define climate change?

Sierra Harris:

For me, it's really looking at what is the best available science that we have right now that looks into the past data of temperatures and rainfall and all the different things we can see looking back in time, and looking at how with the documented increases in temperatures and rainfall and things like that, what we need to look for moving forward. And so climate change is just really, how can we be prepared for a changing climate?

Kristin Oxford, Host:

Oh, great. Love that. Often when we hear stories about climate impacts, they tend to be stories about the weather. So how does weather relate to climate, and why, with so much talk of the planet warming, are so many of the extreme weather events that we've been seeing, things like blizzards and ice storms?

Sierra Harris:

Yeah, it's a tricky one to tease apart weather and climate change. But really it's, they're very linked because climate change is caused by a warming planet. And the warming planet has many different ways that it shows itself through the ocean, like ice melt... Sorry, sea level rise, and through the fact that we have extreme drought followed by extreme rain and flooding. And it's just one of the best things I've ever heard is calling it global weirding, because nothing is going to be predictable. It's really going to be, how weather is responding to climate change, but how everything else is responding. And so we often get comments like, "Well, heck, last year was a drought, and now we have too much rain. That's not climate change." And it's like, yes, well weather is definitely tied to climate change, but it also is its own pattern that goes through history, but climate change is definitely affecting it in many ways.

Kristin Oxford, Host:

Okay, that's really helpful to understand. Thank you. Speaking of flooding and weird weather and stuff, folks in the Greater Yellowstone Ecosystem will certainly remember, and folks outside may well remember that last year in 2022, we had some pretty extreme and destructive flooding along the Yellowstone River. And it washed out many roads in the park itself, and a lot of folks lost homes and had property damage and all kinds of stuff. So is there a climate link to flooding events like that, and is that something we might see more of in the future?

Sierra Harris:

Yeah. Yeah, so last June we sort of had the perfect storm of events. We had warming temperatures, we had a lot of rain, we still had heavy snowpack in our mountains. And all that came together at once, and it started melting the snowpack really, really quickly and it just hit our streams and rivers in one big giant pulse, and it washed everything out. And yes, I would say we should expect more of that. It definitely, some floods last for a long time. We see them on the news for days and days and days due to hurricanes or whatever, but this is a giant melt of snow all happening at once. And since we're pretty famous for our snowpack around here, I think we should be prepared for additional flooding.

Kristin Oxford, Host:

Wild. So instead of slowly melting the snowpack over the course of a season, it's just going to maybe come in a more extreme melting event.

Sierra Harris:

Yeah, we're finding that on average, our spring temperatures are happening eight days sooner, like we're getting warmer temperatures earlier in the year. And so the fact that that was rain that happened with a warmer temperature on snowpack, that we'd had a pretty heavy snowpack time, and so it really melted quickly, more than anyone had ever imagined it would.

Kristin Oxford, Host:

Yeah, it was pretty wild. And the next step of that, tell us a little bit about how climate change is playing out across the Greater Yellowstone region. So what, in addition to things like more sort of extreme melting and flooding, what are some of the changes that we can anticipate in the next 5 years or 20 years?

Sierra Harris:

One of the things that I've talked to a lot of people about is the receding glaciers. And people think, "Oh, that's just in Glacier National Park," but definitely in the Tetons they're seeing it, they're seeing it on the Wind River Reservation in the Wind River Mountains. And so that's just one of the hallmark ways of seeing climate change. But also they're seeing migration patterns shifting for wildlife that things, the vegetation that used to grow in one place no longer grows there because it's too hot and dry. And so that's shifting the timing of when animals migrate changes, because they often need to get out of the hot and get up into the cooler climate sooner and faster, so that's changing. They're looking at different types of pollinators and things that are happening because plants are blooming at different times, and so it's working its way. And another thing they're seeing is just a lot of invasive plants and species that are taking hold pretty quickly.

Kristin Oxford, Host:

So, GYC's Climate Program is centered on advancing policies and projects to make the Greater Yellowstone Ecosystem more resilient to climate change. Can you tell us a little bit about some of those projects?

Sierra Harris:

Yeah, we do a lot of fun projects. One of the things we really focus on is natural water storage, which is helping the landscape to store water longer and later into the season. So when those big snow melts happen, it's important that our creeks and river systems are in a restored state so that they can act like a

sponge and hold that water and slow the flow. And as it sits in that sponge, so to speak, it slowly works its way back into the stream later in the season, so that allows for cooler water temperatures, higher flows for fish, and things like that.

And so we work on projects, we pretend to be beavers, we make beaver mimicry structures, we're actually creating habitat for actual beavers, because they're much better at this than we are. And some other things that we do are work on some policy issues. We're working on floodplain planning protections so, how can we protect our flood plains and wetlands across Montana to ensure that the water has a place to go in big events like the Yellowstone flooding? And our climate work is supporting the work that our Fort Washakie office is doing with tribal water rights and other projects and programs in that area.

Kristin Oxford, Host:

So when we're talking about work to address climate change, and you and I have already both done this, we use the word resilience or resiliency a lot. So what does that mean, and why aren't we talking about climate change reversal or prevention, instead of just resiliency?

Sierra Harris:

Yeah, we can't really stop climate change at this point. So there's a lot of really great people out there working on reducing carbon emissions and greenhouse gas emissions. And for us, with our work at GYC, we really like to look at, how can we make our landscape more resilient to the changes that are happening right now, and the changes that we can see that are on the horizon? And so it's just basically providing both the built and the natural landscape with tools to prepare for pretty much anything, and the ability to understand why it's happening, not just that it's this big mystery that we have all these crazy weather events and things.

Kristin Oxford, Host:

Yeah, okay, that makes sense. And as part of that work, you recently conducted a number of interviews with people across the Ecosystem, asking them how climate change is showing up in their daily lives and their work. How did that project come about as a component of your work?

Sierra Harris:

It was really great. Once I started working for GYC I was invited to join this group of conservation practitioners across the Greater Yellowstone Ecosystem, and it's made up of NGOs, a lot of federal and state agency folks. And we met every other week, or we still meet every other week, and talk about what we're seeing across the landscape. And one of those conversations led to, why don't we just ask everybody who's working across the landscape, or at least get a smattering of who's out there and what they're seeing, and what's concerning them, and what are their biggest barriers?

And so I did, I created a survey, I interviewed 35 people which doesn't sound like a lot, but it really was a lot of people to get them to call me back. But people were really amazing and it just led to this survey which we've now put together, and have some pretty interesting results.

Kristin Oxford, Host:

Tell us about those results. What did you learn? What kinds of changes were people reporting that they were experiencing?

Sierra Harris:

Yeah, a lot of people said they couldn't get a handle on the water variability. There's either too much, not enough, there's a drought, there's a rainstorm. That was a big thing that they're seeing that's just very unpredictable. They're seeing a lot of changes to the landscape like habitat conversion. There's this part called Conifer encroachment where trees are moving in and kind of bunching out, pushing out the sagebrush or pushing out aspen trees. And so that, they're seeing that by a warmer, drier climate fish species are not as strong and healthy as they used to be, because they're not enjoying the warmer water temperatures.

Kristin Oxford, Host:

So pretty variable impacts. I guess what I should have asked is, can you tell us a little bit about the kinds of people that you were interviewing? Are these farmers, ranchers, recreationists? Who were you actually talking to?

Sierra Harris:

So the Greater Yellowstone Climate Assessment did a really great job of interviewing. They did Voices of the Greater Yellowstone, so they interviewed a lot of different types of people, stakeholders that are working. And this was more specific to federal and state and tribal people that are working in the natural resource conservation field who are out on the ground every day. And it was just better to get that handle on what practitioners are seeing in the field.

Kristin Oxford, Host:

Okay, got it. That makes a lot of sense. So you mentioned water variability, but what are some of the other concerns that people were expressing when it comes to these changes?

Sierra Harris:

An increase in wildfires, an increase in the number of weeds that come in that then dry up really quickly at the end of the summer and it can cause flash fuels for wildfires. There's just a whole lot of things that we didn't even know would be linked to climate change, and especially this invasive weed issue. It's become pretty apparent across the GYE that people are really worried, especially about cheatgrass.

Kristin Oxford, Host:

So did anything that you learned over the course of these conversations surprise you?

Sierra Harris:

Yeah, I learned that one of the invasive species that's really a big problem are feral horses. The Wind River Reservation has many thousands of feral horses that are really hammering the landscape and causing erosion issues and lack of vegetation for some of the other animals, elk and deer that need to eat that food. So I had no idea feral horses were such a big issue.

Kristin Oxford, Host:

Interesting. And so is that issue brought about by changes in vegetation?

Sierra Harris:

Yeah, they are. I mean, just think if you had wild horse herds running around and they just sort of eat up all the vegetation, and there's not enough for the ungulates that live in that area, and it's their home, and so it's been a real problem.

Kristin Oxford, Host:

Yeah, that's wild, I never would've guessed that either. So with all these changes on the landscape, and it sounds like probably more to come, what are some of the barriers that people are finding that are preventing them from being able to adapt or adequately prepare?

Sierra Harris:

I think the number one thing when I talk to people was capacity. Everyone is very busy with their, I don't want to say day job, but their regular work that they've been assigned to do. And then when they're asked to put sort of a climate hat on as well and think about how their work and their projects is going to be affected by climate change in the future, it's kind of a stressful topic for them. Because they want to do what's right, but they also know that they're very busy, and they want to do the best that they can in their regular jobs, and so it's helping people to learn to blend it all together. That climate, the work they're doing is already climate work, and just to sort of change their frame of reference.

Kristin Oxford, Host:

Oh, that makes sense. It's sort of just integrating those pieces a little bit more. Yeah. Got it. So in thinking about doing interviews, and maybe this was a little different because you were primarily working with agency folks and other representatives. We live in a pretty dynamic region with a wide range of opinions and perspectives. Did you chat with anyone still resistant to the idea that the climate is changing, or perhaps feels like it's just something they don't need to worry about?

Sierra Harris:

Not specifically in these interviews, but I've had conversations with people over the past couple of years and it's usually that, isn't this just weather? Isn't the weather just changing? I've been a rancher or I've been a farmer for years and my grandfather said, we used to get rain like this, and then we had this massive drought, and now it's raining again. So it's going to not fix itself, but it's just a cycle that'll work through. And that's the biggest sort of pushback I get is like, this is what's to be expected because it's always been this way.

Kristin Oxford, Host:

Yeah. Do you think there's any amount of that that is related to the phenomenon of shifting baselines? Yeah?

Sierra Harris:

Yeah, I do.

Kristin Oxford, Host:

Yeah, which is just basically that what conditions we live in we assume are normal, and we can't cast ourselves back into the past to understand how things were before. So yeah, very interesting in lots of aspects of conservation work. So now that this particular set of interviews is over, what's next for you? What lies ahead for GYC's climate work in the immediate future?

Sierra Harris:

Well, I really hope to gather all the information we got from these interviews and put it into maybe a story map or some sort of report that's really easy to understand. These are the things that are happening in the landscape, these are the places that we need help and support from our communities. And what I really hope is that we get the message out to a wide audience. It shouldn't just be conservation practitioners, it shouldn't just be the staff that works at GYC. It should really just be everybody who's working out there across the Greater Yellowstone Ecosystem in some natural resource capacity, and allowing them to ask questions, so come to different meetings, support them with a slideshow if they want to give it to their staff, support them with one-pagers so that not everybody has to read giant documents. So just, what is it?

So I'm working with a small group of people right now and asking them, what would be the way that you'd like to share it with your team? Or, what have you seen that's been successful in the past with sharing this type of information without overwhelming people? And one of the things we're also working on was that infrastructure bill that came through, it came with a lot of climate money. And so we're trying to help the different groups and agencies that are out there that need to figure out how to get that money on the ground, and they would really help with coming up with projects and coming up with partnerships and ways that we can sort of share the load of that bulk of money. Because a five-year chunk of money, and it's a lot of great money to do great work, and so we just need to get ourselves out there. And so GYC is definitely diving in deep into that work, and it's been a lot of fun.

Kristin Oxford, Host:

Yeah, that's great. You said something kind of key in there, which is that talking about sharing about climate change impacts without overwhelming people, how do you do that? This is such a big, unwieldy, existential topic. How do you talk about climate change in a way that doesn't just immediately inspire nothing but overwhelm and doom and gloom?

Sierra Harris:

I practice this with my family quite a lot. I think the best thing is to meet people where they're at. And so if you don't immediately start hitting them with facts and data and this sort of doom and gloom like, "Oh, everything's going to be terrible." And you just meet them where they're at in terms of like, "Do you like to fish? Oh, cool. Well, let's talk about fish and the warming waters and hoot owl restrictions that we have here in Montana, which restricts the times of day you can fish." We talk about, "Do you ski?" "Yeah, I love to ski." Oh, cool. Well, we're kind of losing our snowpack in the mountains, and so Montana may be one of the last best places to ski because where we are in elevation." So what that means for people wanting to move here and ski in the winter because it's not available in other parts of the United States.

I talk about, do you like to garden? Pollinators are awesome. They help us with keeping plants blooming across the landscape that we need that are vital for different food sources for animals. So it's really just kind of talking to someone and asking them what they're interested in, and then just sort of talking, weaving climate change. And there a lot of times I talk about the weather, and how it just seems really crazy and, oh gosh, climate change is doing this to impact warming climates and things like that. So I just try not to be too overwhelming.

Kristin Oxford, Host:

Yeah, no, that makes a lot of sense. And all those examples you just gave are great examples of the ways that a changing climate is very real and very tangible, and very impactful for folks living in this region in particular. You mentioned the hoot owl restrictions with fishing, which I think actually is a really interesting component of this. So tell us why it would be important to restrict fishing to certain parts of the day sometimes.

Sierra Harris:

Yeah, so fishing in Montana, as you know, is a very big deal. Actually it is across the entire Greater Yellowstone Ecosystem. But specifically here in the Big Hole and other parts of Montana, what we've been seeing is there's parts of the year when the flow in the stream in the Big Hole River exactly is very low, it warms up, it stresses the fish out. So if you do what we call it hoot owl, because you shouldn't be fishing in the later afternoon owl times, I think that's what they call it. I'm not entirely sure how they got the name hoot owl, but it's better to fish first thing in the morning. When the fish are not stressed, it's cooler, and then usually it's around 2:00 PM is when they'd stop it. And also they restrict the number of people that can be in an area, especially sections of different rivers, because too many people fishing all at once, even if it is a cooler time of day, is stressful on their fish populations.

Kristin Oxford, Host:

Why does warm water stress fish? Because I've got to say, if I'm choosing to jump in a river, I'd prefer it to be quite warm.

Sierra Harris:

Well, warmer water has less oxygen, and fish need that to survive. And it also causes algal blooms and different things like that which are not healthy for the repairing ecosystem.

Kristin Oxford, Host:

Great. So basically the fish are in there just warm, sluggish and short of breath, and it's not doing them any favors for us to go ahead and yank them out and give them a particularly stressful experience, so we're just trying to be a little judicious with how we do that. So those are the hoot owl restrictions. So yeah., Thanks for explaining that. Sierra, what do you wish more people knew or accepted about climate change? Either in our region or just more broadly?

Sierra Harris:

Yeah, for me it's just really having that conversation about climate change and understanding that it is not a problem that just academics or conservation groups are going to be able to solve all alone, it's going to take all of us working together. And it shouldn't be, you have to invest millions of dollars or buy really expensive new appliances and things. We can just have the conversation, talk to your neighbors or colleagues about what they're seeing, and go from there.

Kristin Oxford, Host:

Yeah, that makes a lot of sense. And it makes me think about this sort of conundrum we have where we know that most of the ways to address climate change are kind of out of the average person's control, and really reside a little bit more with our leadership and large corporations who are having kind of out-sized climate impacts, and so are the ones that then could have an out-sized impact on helping solve this challenge. But even so, what are some things that individuals like our listeners could do to help make



their own region a little more resilient to climate change? Or just, I guess how to use, a bit of the cliché term, how can they make a difference?

Sierra Harris:

Yeah, there's a lot of really great things. I mean, one thing is just really just talking about climate change, and just having it be a normal conversation you have with your neighbor or whomever. When you do that, you can also start looking into what activities are happening in your community. I'm always amazed at how many groups work on different parts of climate change. I recently attended the Montana Climate Summit, and there were just a wide variety of people there working on different issues, and there's just lots of ways to get people involved. And so just join a group, listen to a podcast, go out to a rally about anything, and try to figure out what you can do or what's within your comfort zone of doing. Whether it's conserving water, or it's planting a pollinator garden, or recycling. Everybody should do their part, but they should just talk about what they're doing and how they're playing a part, because it doesn't need to be all on the shoulders of academics and scientists and policy makers.

Kristin Oxford, Host:

Yeah, it's like we need to normalize and kind of de-wonkify the topic. You mentioned earlier in our conversation that you never thought you'd end up working in climate change. Can you dig into that a little bit more for us?

Sierra Harris:

Absolutely. I started out wanting to study wolves in Yellowstone, that was like my dream. And I realized that pretty much everyone wants to study wolves in Yellowstone. So I had an opportunity to go to Australia when I was in college and study tropical fruit bats. And when I was there, and this was a long time ago, there was issues with climate change already. They were cutting down parts of the rainforest, and there was this massive tick epidemic that was killing these flying fruit fox bats. And it was related to the fact that it was a hotter dry environment, and these ticks excelled in that environment. And so that was the first time I had a reality like, oh wow, look at climate change affecting rainforest and things, like people just think climate change is everything's drying up and hot like a desert. And so that sort of got me interested.

And then when I was in graduate school, I realized I lived in San Diego, and that was a county that had 88 threatened and endangered species, it's quite possibly more now, in one county. We have 17 in the entire state of Montana, so it's quite a difference. And I realized that I felt pretty hopeless, and I really wanted to find a way that I could give back. So I moved back to the Greater Yellowstone Ecosystem where I still felt like I could get a handle on conservation and water and wildlife issues, and working on water slowly led me to realize what a big deal water was across the west. I mean, it really is.

There's a lot of books, a lot of great information out there, but until you see it firsthand, working with watershed groups and landowners and things, you realize that this is a big deal, and we have a responsibility as being a headwaters area, which basically means all the water that stems from our mountains and stuff eventually makes its way downstream into the Missouri River and other places.

So it made me realize that every drop of water that we save or conserve in this area is going to make a difference downstream. And then it sort of just led to, well, I can't just think about water, there's an entire Ecosystem out there. And so I got excited about climate change and decided that, yeah, this is a place I can make a difference, and I enjoy it, and I've met a lot of really amazing interesting people along the way.

Kristin Oxford, Host:

Wow, yeah, that's quite a journey from wolves to fruit bats to ticks, to a biodiversity crisis in Southern California, back to the Greater Yellowstone. Are you seeing more positions out there, more jobs with the word climate in the title? Because yours says climate right on the title. Is that something that you're noticing more of?

Sierra Harris:

It is actually. I was amazed that once I accepted this position, how many other places had it, and it wasn't just community organizers that were going out and trying to get people to help with climate bills and things. It was a lot of like, we're going to write a climate adaptation plan, and we need a climate adaptation organizer. We need students to be able to work underneath this climate person at a school or a university. And so it's really become an umbrella position for a lot of different agencies, where they wrap all their other work under this climate lens. And it's makes me happy to see that it's spreading out there, and there's a lot of great jobs that have come about, and you can really work anywhere, big city, little cities here out in the great west.

Kristin Oxford, Host:

Yeah, no, that makes a lot of sense. It's pretty universal at this point. Sierra, climate change can be a tough issue to work on. We've already touched on that a bit. What keeps you hopeful?

Sierra Harris:

Well, two things really. I think that just the amount of energy and support that's out there, the amount of people I've met that I never would've met otherwise working on climate things, has really inspired me. Because even though it's a big heavy topic and it seems some days like, what are we even doing here? People just have great resiliency and great ideas, and there's always a way that we can sort of think about how to look at it differently. And I've just been really excited about that. And then the second part is, I mean, just as cliché as it sounds, just getting out there in the landscape, being able to hike and camp and watch birds and pick flowers, actually no picking flowers, just observing flowers, only photos. And I just... Yeah, just getting the out there and the ability to just really be a part of the landscape.

Kristin Oxford, Host:

Yeah, thanks for sharing that. Okay, we have quite the range of listener questions for you now. So we're going to start with a kind of local one. Steven from Montana asks, I noticed that the fire season here in Montana was not as bad compared to previous years. Why are some summers really bad, and other years not so much? Is that related to climate change?

Sierra Harris:

Yes, it is. There are a lot of factors out there that affect the wildfire season here in the Greater Yellowstone Ecosystem, especially areas that have had many years of drought in a row or they've had pine bark beetle invasions and different things like that. Those are perfect, I guess you could say, ingredients for a pretty crazy wildfire season.

Somehow this summer we've had a really wet summer, and despite the fact that we had a lot of early rain and later mid-summer rain and now late summer, early fall rain, it hasn't really dried out. And we've been pretty fortunate. And the temperatures have only hit hot areas briefly, so we're lucky this year.

Next year could be completely different. We could have low snowpack, we could have times when we don't get any snow for many, many months in a row, or it gets really hot in January, that happens a lot. So all those things sort of build into the next fire season. And we're seeing all those crazy fires in Canada right now. Those lasted from over the winter, and they just continued on and blew up again once it got hot and dry, because they didn't get enough moisture. So climate change is creating a warmer, drier environment. It's also creating growing seasons that are different and not what they used to be. So it's pretty real that wildfires will be increasing, and they will not be predictable.

Kristin Oxford, Host:

Wild. Okay, well thanks for that explanation. Next up we have Emily from Colorado who asks, how does climate change affect wildlife like grizzly bears and wolves?

Sierra Harris:

That's a great question because we often think about water and fish and things like that, but when you think about the animals that live out on the landscape, especially predators, it's important to think about how their food habits and their food availability is going to be changing. Because as elk and deer and things move across the landscape to get places where there's more vegetation to eat, it changes their migration route, which then will cause the grizzly bears and wolves to change their routes. And then if you remember from a previous podcast, we talked about whitebark pine, and that is a really important food source for bears in the fall, and they need that before they go into hibernation.

And our whitebark pine tree species are at elevations that are really high, and those areas are getting hotter and drier, which is causing that tree species to die off. And that food source for bears is not available, or not available in the quantity that's needed. So that sort of pushes those animals into other places, and sometimes it might get them in trouble. They may end up in a garbage can in someone's neighborhood, or they may end up eating dog food. So it's really important that we try to keep food sources available in their natural areas for bears and wolves.

Kristin Oxford, Host:

That makes a lot of sense. Next question. So Olivia from Utah wants to know what's the deal with cheatgrass?

Sierra Harris:

Yeah, that is a great thing. I have learned a lot about cheatgrass just working on those interviews. It is a really pervasive weed. It creates a monoculture, it doesn't allow native plants to grow in. And a lot of people that I spoke with were really concerned if there's catastrophic wildfires in the area and it just torches all the vegetation that's in there, that the first thing that might come back in there if they already have patches of cheatgrass in areas would be cheatgrass, and it would change the landscape as we know it completely. And those food sources would be gone, and it would really be sort of a huge issue to deal with.

And one of the things about cheatgrass is it's, I don't want to say smart, but it's really good at changing how it adapts to the environment, and scientists and other people are really having a challenging time finding herbicides that can tackle it at the level it needs to be tackled. And so that piece is going on, but also preventing the cheatgrass from moving into areas, educating people what cheatgrass looks like. There's a lot of invasive grass grants out there that sort of monitor what's happening out there and what kind of herbicides need to be applied. And it's just a body of science that I didn't even know was a thing,

and so I have learned a lot about cheatgrass, and I know cheatgrass represents a lot of invasive species, but that's the one that's at the forefront.

Kristin Oxford, Host:

Got it. Okay. Last listener question, Laura from Ohio asks, do you have any advice on how to convince someone that climate change is real and done by people?

Sierra Harris:

Yeah, this is a tricky task. I think the important thing is to really just hear what they have to say, try and meet them where they're at. If they have concerns about junk science or whatever, just talk about it. I think people want to be heard when they talk about climate change either if it's good or bad, and meet them where they're at. If they are people that are interested in car races and things like that, just talk about, "Wow, maybe there's these awesome electric fuel efficient cars we can get into now and talk about."

Or if there are people that want to go explore places they've never been, be like, "Yeah, that place if the glaciers melt or whatever happens, may not be available, so we should probably get in there and check it out really soon." But just, I think everyone wants to be heard and no one wants to feel like their ideas are bad, but I think just quietly and consistently having conversations about climate change, that it's real, it's happening, we are all in the midst of it whether we want to be or not. And so it's going to take just sort of a community movement, a global movement for us all to be working together to really see a difference.

Kristin Oxford, Host:

Yeah. Thank you for sharing that. Sarah, one question that we ask all of our guests, and you are probably aware that this one is coming is, do you have a conservation hero?

Sierra Harris:

Can I have two?

Kristin Oxford, Host:

You may have two.

Sierra Harris:

I really love Jane Goodall with all my heart. I've loved her since I was a kid. I wanted to go to Africa and study chimpanzees in the wild. But she was just always a strong woman in conservation that worked really hard through a lot of adversity and a lot of challenges, and I just said, that's the kind of person I want to be, who just works through it all and has amazing results and just writes books and goes and book tours and stuff. I didn't really want to be that kind of person, but I wanted to be like her in her amazing work.

And the other person I have to say is my dad. He has always been the biggest proponent of us spending time outside. And when we were kids we went on a lot of hiking, camping, and sort of forced family adventures outside, that were not always my favorite. And I always was confused why my dad, who works in conservation, would also want to spend so much time outside in conservation. And it sort of sparked in me, I don't know how old I was, definitely done with high school though, and in college when I realized that yeah, you have to appreciate the places you work, and that's what inspires you. And if you

don't get out there and enjoy them and you're just reading about them in a piece of paper or in a newspaper article, it's not going to hit home. And so I thank my dad for all that wonderful stuff that we got to do outside when we were kids, because it really did make a difference.

Kristin Oxford, Host:

Sounds like he knew what he was doing. Sierra Harris, thank you so much for joining us on The Voices of Greater Yellowstone, it was absolutely a pleasure to talk with you today.

Sierra Harris:

Well, thank you. This has been a lot of fun, and I'm really glad I got to be a part of the podcast.

Kristin Oxford, Host:

Another enormous thank you to Sierra for joining us on the podcast, and sharing her story and her work with us. Sierra, we're so grateful you're out there making Greater Yellowstone a more climate resilient ecosystem.

To truly sum it up, climate change, it's terrifying, but there is still hope. The Greater Yellowstone Coalition is committed to contributing to our collective understanding of how climate change is impacting and will continue to impact the ecosystem. And because we know that climate solutions will only be durable and sustainable if they incorporate the knowledge and experience of diverse communities within Greater Yellowstone, we are hard at work alongside our partners, building a base of scientific and community-based information and preparing to tackle the weirdness together.

The Greater Yellowstone Coalition is a conservation nonprofit that works with all people to protect the lands, waters, and wildlife of the Greater Yellowstone Ecosystem. With Yellowstone and Grand Teton National Parks at its core, the Greater Yellowstone Ecosystem is one of the last nearly intact temperate ecosystems on earth, meaning it has most of its original wildlife and plant species, and still contains large swaths of undeveloped open lands. If you'd like to support our work, please consider making a gift in the form of a donation to GYC. You can find a link in the show notes of this episode. Every dollar helps keep Greater Yellowstone remarkable, or you can sign up for our email list and start getting updates on our work and opportunities to take action. We appreciate all you do for this special corner of the globe. Thanks for tuning in, and we'll see you next time.