Prairie Pod Transcript

Season 3, Episode 7: The Minnesota Prairie gets a health check-up: Grassland Monitoring Team

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Guests: Marissa Ahlering, TNC, Daren Carlson, DNR, Sara Vacek, USFWS

Podcast audio can be found online at mndnr.gov/prairiepod

Transcript:

((sounds of birds chirping and wind blowing))

Megan: Hey, welcome back to the Prairie Pod. I am so excited today, Mike. Are you excited?

Mike: I'm really excited. I love this topic today, you know?

Megan: Well you would.

Mike: You say that like it's a bad thing.

Megan: No, I don't mean it as a bad thing.

Mike: I finally feel like I'm in my element here with this talk today.

Megan: No, that's what I meant. Gosh, you take everything I say like it's negative, I swear.

Mike: Wow.

Megan: I was saying it as a complement. Like you're going to own this Mike!

Mike: Bless your heart, Megan.

Megan: Do you mean that in a sarcastic way or the nice way, asking for a friend.

Mike: See, I only know it was a sarcastic way because you told me it could be sarcastic. I always meant it with an utmost sincerity.

Megan: With love. Okay. I'm going to pretend like you mention it with love right now. We're really excited because we're sitting here with three very special people, also very

talented and amazing people, and so we're going to let them introduce themselves and then we'll tell you what we're talking about today. Sara.

Sara: Hi. I'm Sara Vacek, I am the wildlife biologist with the US Fish and Wildlife Service at the Morris Wetland Management District in Morris, Minnesota.

Daren: Hi, I'm Daren Carlson. I'm with Minnesota Department of Natural Resources. I'm the monitoring coordinator for the State Wildlife Action Plan and I reside in St. Paul.

Marissa: And I'm Marissa Ahlering, I'm the lead prairie ecologist for The Nature Conservancy in Minnesota, North Dakota, and South Dakota.

Megan: Marissa wins today for covering the most number of states. The biggest area.

Marissa: It's a lot of prairie.

Megan: You're the winner. It's a lot of prairie.

Mike: Thanks so much for coming, you guys.

Megan: Yeah, thank you.

Mike: Made a big drive, a couple of you.

Megan: I know. Super nice. And we brought all of these fantastic, amazing people here because we are going to talk about the grassland monitoring team. Did you know that even prairies need a health checkup? This is right. Mike, don't sing the song. Don't sing it. Resist.

Mike: What song are you talking about?

Megan: Oh, boy. The one you were singing the entire time we planned this episode. We're not going to sing it because we just won't. So anyway, it turns out there's a whole team of scientists who are looking at the health of Minnesota prairies and what we hope that they're finding is that there's some diversity, maybe some resilience, and persistence. These are all top marks that we want to give the prairie, so we're hopeful that that's some of what we're seeing, but we're also going to talk through why this is important, why we might be seeing some other things that aren't as positive, and why this all matters, why should we give the prairies a health checkup. So, okay. Back in season 2, if you remember in episode 7, we talked about how do I know if I'm doing a good job and we mentioned the grassland monitoring team then, but we just did it in like a cursory way with all of the other choices you can make for monitoring, so we wanted to take a deeper dive here in season 3 and so I also heard from Mike that they're spicy now, so I want to hear what that means.

Mike: Spicy, just like some Missouri barbecue man, that's right. Marissa knows what I'm talking about.

Marissa: Yes, absolutely.

Megan: I can't with you. Barbecue aside, we're going to start with a little bit. I know you guys know what your titles are, but we're going to talk, have you tell us a little bit about

what you each do for your jobs in addition to doing the grassland monitoring team. So Sara, tell us a little bit about what you do.

Sara: Sure, so the office that I work at is part of the National Wildlife Refuge system and so we're a land management office first and foremost and I have I'm pretty sure the best job on the staff because I get to help with some of the on-the-ground management things like prescribed burning and grazing and that kind of stuff, but I also get to sort of do a little checkup on how all that stuff is going. So my job is to coordinate all of the monitoring surveys and research that goes on in our district, so I get to have kind of get my fingers in a little bit of all the different management activities that we do.

Megan: And we just play on the prairie.

Sara: We do get to play on the prairie together, it's just fun. Yeah.

Mike: I've seen it.

Megan: I've seen it. Mike's a witness. He knows that it's happened. Sara actually took the very first photo that was on the Prairie Pod website.

Sara: I did?

Megan: You did. On a hillside somewhere.

Sara: I'll have to go back and look.

Megan: Yeah, you did a great job. See, so memorable. It's memorable for us. Daren, tell us a little bit about what you do.

Daren: Well, I am part of the Nongame Wildlife Program and but before that, I was part of no program other than a plan, the State Wildlife Action Plan, which is now been folded into the Non-game Wildlife Program. The Wildlife Action Plan is a federally funded program, all states create one to direct funds for rare and declining wildlife, and I've been involved with that since the first one, we've done two of these versions. They have to be updated every 10 years, it's first involved in 2003, and have continued on since that time, so I am now the monitoring coordinator. I was first the data geek, moved into now the data geek extra, I don't know, more focused data geek.

Megan: Plus, data geek plus.

Daren: Plus.

Megan: 2.0.

Daren: 2.0. And so I oversee different monitoring programs associated with implementing the State Wildlife Action Plan. I'm also involved a lot with the implementation of that plan. The way we're doing it this year is or this time around, I should say, is called conservation focus area, so we focus in on the geographical location. First one we started is in the prairie coteau in the far southwest part of Minnesota and we've been now we moved into the southeast corner of Minnesota and also in the lakes region of Minnesota, so we got three going on, so I'm involved with that as well.

Mike: Marissa, how about you? What's your work?

Marissa: Well, I as a prairie ecologist, I do like all things prairie for our chapter. I'm on our science team for our chapter of The Nature Conservancy in the three states and basically, the shortest answer I can give about my job is that I bring science to bear on our grassland conservation work, so anything from carbon to butterflies to plants to birds to wind energy, doing the science and bringing the literature to help us solve our problems and challenges.

Mike: So I was curious. We're having lunch and you said when you grew up, your family, you guys didn't do much in the outdoors. So I'm curious how you became this prairie scientist with that upbringing.

Marissa: Well, we did stuff in the outdoors, we just didn't camp. So I think what I said is my mom's idea of camping is the Holiday Inn. But we visited lots of national parks and things where we'd hike during the day and then you stay at the Holiday Inn at night. And so we did do traveling and I got to see a lot of, especially out west, the big national parks and I just, yeah, I love to be outside. Originally, I came to be a prairie ecologist but I wanted to be a marine biologist, but then I went to school in Nebraska, so you know, that made it challenging. So I fell in love with the prairies in Nebraska and yeah, the rest is history.

Megan: Far commute to the ocean from Nebraska.

Marissa: Yeah, it's hard to be a marine biologist in Nebraska.

Megan: That's so weird. We have like very similar life paths. Maybe there's a connection between national parks and then people becoming prairie biologists because we used to travel around to all the national parks when we were kids. But anyway, this podcast is not about national parks, even though they're very, very amazing and you should definitely go visit some. This podcast is about prairie by golly and this one in particular is about grassland monitoring teams, so let's start sad, I know, that's rare that we do this on the podcast, but we're going to start with Sara. Tell us a little bit about the state of the tallgrass prairie and what it means when it declines. I know, big heavy question.

Sara: Yeah. Well, and I, this probably gets mentioned on every single episode of the podcast but we have somewhere around 1% of our original tallgrass prairie left in Minnesota. I think what we forget sometimes when we talk about is that that little bit that's left isn't always in the greatest condition, either, and we're really struggling a lot with how to maintain those little bits of prairie that we do still have left, how to protect them against invasion by cool season grasses like brome and Kentucky bluegrasses and in some places, woody vegetation encroaching in our prairie, so we're kind of thinking about both things, how we don't have very much prairie left but then also what we do have, what does it look like, and it's not always great, unfortunately.

Mike: So the Grassland Monitoring Team, you guys formed this team when we're basically sitting here with the three developers of this team, is that right? I mean, I'm sure there are other people involved that, yeah. Three of the original people.

Daren: Pretty close. Sara's probably been there from the very beginning, right? Came on shortly afterwards and Marissa maybe.

Marissa: My supervisor, Mary Cornett, was really involved. I wasn't working for TNC at the time.

Daren: When it was developed? I see. Well, despite that, I want to ask you to tell us more about GMT and what that team is all about.

Marissa: Yeah, well like Sara said, one of the main concerns for our team is really the condition of the native prairie, and so that's one thing. We're really focused on the remnant prairie that's left. And it's a partnership of people all basically concerned about how do we make the best decisions for managing our prairie to improve the condition. So basically, and by that, I think mainly we're talking about like reducing invasive species, fostering native species, and also diversity of native species, so not just 100% big bluestem isn't good enough. We want some diversity of species out there, so the goal is really trying to work together, realizing that we can learn a lot faster when it's TNC and the DNR and the Fish and Wildlife Service all working together pooling our data to try to understand what's working and what isn't working for improving the condition of our native prairies.

Mike: So one thing about your guys' team that I really admire is its adaptive management component. So my entire career really, even going back to my undergrad days has been an emphasis on adaptive management as like the secret way to manage our resources.

Marissa: I don't think it's a secret, is it a secret?

Mike: Well, I think our way of doing it to actually doing it, Daren's right, I think it is a - - anyway.

Marissa: Well yeah, that's makes it.

Mike: Yeah. My point is that when I started here now it's been like four years ago and was involved helping Daren, I was so impressed. It seemed to me like the very first team I'd ever been involved with really even read much about that was really doing adaptive management. And so just kudos to you guys and other people that were developing at the ground floor of developing this project. It seems like you're really doing adaptive management.

Megan: We might need to, since Mike said it now three times, like Beetlejuice, Beetlejuice, Beetlejuice. Adaptive management, adaptive management, adaptive management. Daren, why don't you go ahead and just explain what we mean when we say adaptive management? Like what are we trying to do?

Daren: Okay. Adaptive management in a nutshell. Here I go. So it's I would call it a one-sentence answer, it's structured learning by doing. But I also like another visual that I think both Sara and Marissa have done many times, I've done a few times on presentations, thinking of it as a spectrum from just going out there and doing something and hoping it works to doing a really structured research project. It's somewhere in between there. You're still out managing but you have some structure to

it and a critical component is to measure the results of what you've done and then evaluate those results. Usually, you have a model that can take that information and that's what we have, and then you adapt what you do from what you've learned, and it's over time and the real value and I think in what we have with this is Marissa mentions power in numbers. We have a lot of folks doing this. If it's just one person, you can't, I mean, you could take one half of your area that you're responsible for managing and burn it, the other half graze it, but it's going to take you about 100 years to learn. But when you have 30 areas, I don't know how many management units we have about. Well, I think it's 70 management units that we are learning from, people doing different things and so you can speed up that learning process and just so much more data going in.

Megan: It's super important too because like one of the number one things that landowners always ask me in addition to what is this bug that's in my prairie is they always want to know like well, when should I burn, when should I not, when should I graze, when should I not, and then when do I do it again? And it's like this idea of a recipe, right? And so we're trying to get which, as we say on the podcast a lot of times, throw that out. You're dealing with nature here and there's no like standard set recipe other than you know you're going to need sugar, flower, eggs, which is your diversity in all of those things but you're going to have to keep, as you say, adapting the recipe to make it work on the land. So you can't just say oh, we're going to burn every three years and be done because that's not how nature works. So you guys are trying to refine like when you do make a choice, how does that work, and then what happens after you made it, and then what is the next choice you should make. Right?

Daren: Correct, yes.

Sara: And I think it's important to, you know what, I mean Mike's right on that there's a lot of misunderstanding about what adaptive management is and then I think it almost doesn't get used because of that lack of understanding, and the best examples for a long time that people have had to point to are things like really big things like adaptive harvest management, the way that we set waterfall harvest for waterfowl hunting, which is very big and involved and complicated and until we started projects like this one, we didn't really know exactly how to make adaptive management work. I mean, this is still statewide but on that sort of local scale with on the ground managers trying to implement the information, so this is one of the first projects that really successful that's been able to do that, which is cool.

Daren: Yeah, and I think, I mean, some of those other ingredients that you really need, I mean, there's a lot of different pieces, people with different expertise that need to have. I mean, we have, well, just of the three of us, we're a great core team, we've been together for boy, 10 years now pretty much. I don't know if we ever yell at each other.

((Laughter))

Daren: We hardly ever see each other. We talk on the phone mostly, we talk a lot but this is like we're actually sitting next to each other, which is rare, but.

Megan: So we should be concerned - -

Daren: Maybe we'll have Mike start yelling, I don't know.

Sara: If you start seeing elbows going.

((Laughter))

Daren: But you know, we need to have statistician involved, modeler involved, somebody that can handle the database, somebody that knows the plants, the prairie plants, need to have somebody who's really organized, that's Marissa, need to have somebody that is just overall just kind of knows everything that's Sara and then you need to have this data geek like me that can pull the data together and put it in a meaningful way so we can make some sense out of what's happening. Not that the others don't, but I.

Megan: A special side note here for Kurt Vacek, if you're listening, Daren just said that Sara knows everything. Just want to one fallout there, just want to make sure that gets in the pod.

((Laughter))

Mike: Marissa, can you tell us some more about the nuts and the bolts of the grassland monitoring team and the design and how you evaluate management and its effects, its benefits?

Marissa: Well, nuts and bolts. Well, I would say, I mean I'd start with what we're trying to achieve, which is what you should always start with when you're thinking about adaptive management, what's the objective. And as I say, generally, our objectives are increase native diversity, decrease invasive species, we have four. - -

Sara: Structural diversity.

Marissa: Structural diversity. Oh, and yeah, so increasing, decrease invasives is kind of two, I suppose. And so but then the second thing is like what type of management are we evaluating. And so really, what we're looking at here in this model is burning, grazing, rest, which we definitely consider a management tool and a specific decision to rest. And then how frequently should you be doing that. So do you do it one to two times every three years or is it zero to one times, rest it for three years or just once. So those are the main components of what we're looking at is like whether you should burn, whether you should graze, and how often should you do it. And the other thing that I think is really cool about this model and I think from what we learned over the last 10 years is a really important component of how we're looking at this is we factor in the condition of the site. So where, what condition you start in matters for where you're going to end up and it needs to be factored in to what you should be doing on that site. So if you've got really high diversity, you're in a really good condition, you may not need as much disturbance. You may be in a fairly resilient stable state is what some of our data seems to be suggesting, and so you don't need to be really intensely disturbing it all the time whereas if you're in a really poor condition, it seems like maybe some more of a disturbance. But factoring in that condition of the site I think is really important to teasing apart what are the management decisions to be making at that location.

Megan: And when you say condition, you're just saying about the plants, right?

Marissa: We are, yes.

Megan: Plant diversity. So we're not looking at other animal groups or invertebrate response or things like that.

Marissa: Not in our model, no. I mean, think Daren's been looking at some of that other stuff on some of the units.

Daren: So that's a perfect cue in because mentioned spicy, so I'm resurrecting the acronym SPICE. Sustaining prairies in a changing environment. I actually stole it from.

Mike: I'm totally onboard with it.

Daren: Excellent. I tried rolling it out 10 years ago and it just didn't stick. It was too spicy, I guess, for. Yeah. There we go.

Megan: Sustaining prairies in a changing environment.

Daren: Just call it SPICE, that's it.

Megan: Whoa.

Sara: You got it, it worked.

Daren: Yeah. And so - -

Megan: I got ten points. Okay, he's been saying it all day to me though, don't feel bad listeners.

((Laughter))

Daren: But just to clarify a little bit, so SPICE is a little, it's a very - - it overlaps with the Grassland Monitoring Team, GMT. It's actually a program or project that I started our first monitoring effort with the first Wildlife Action Plan started back in 2007 and we were asked to provide a paper, a publication or something that was important for us, and the one that I had chosen basically says don't monitor for monitoring's sake. Do it in the context of really almost taking a scientific hypothesis-driven approach to it, which I agree. But they have the terms about surveillance monitoring, which I think they meant kind of status trend monitoring. So I was real concerned about just starting up a status trend monitoring program, although that's not what we - - we didn't have one, really, for the prairie, so it's important. And I actually totally disagree with this paper that I think we do need that. ((Laughter)) Not totally, but I think we do need status trend, we need more of that. But this was an opportunity to take the protocols that the Grassland Monitoring Team had and apply that on this status trend project that we had, so it's one they overlap, and so the data that comes from the status trend project, monitoring project feeds into the adaptive management database and model. So there's SPICE, so they're separate.

Mike: SPICE includes birds.

Daren: Yes and within, yeah, thank you, Mike.

Mike: Includes birds, includes plants, we think now it's going to also include insects – pollinators.

Daren: Include pollinators starting this, we did a pilot last summer and then this summer we're going forward. And each year there's 10 sites, there's 40 sites total, each year 10 are monitored, so they're on a rotation basis.

Megan: And this is probably, let's quote Lisa Gelvin-Innvaer here. They're non-game wildlife biologist. She always says, and I'm not going to get it exactly right but she always says well, we don't want stuff to just look good, we want it to function too, right? So SPICE would get at that function, making sure that okay, we've created this really nice diverse plant condition of the prairie here. Now are we getting the animal response that we were hoping that we would get? Because that's what the prairies, it's a whole system of things that are interacting and all kinds of connections that we don't even fully understand, which is why I think the prairies are magic because they're better than space. I said it. Like there's so many things to - - they're the frontier that we need to explore, obviously I say that I put it out there.

Mike: Unbiased.

Megan: Unbiased as an ecologist in the prairie part of the state, completely unbiased.

Mike: I agree.

Daren: I had a colleague from graduate school, he had come up from Brazil, and to study prairies and he said prairies are the Amazon in the Midwest.

Megan: They are. There's so many things we don't understand.

Daren: They're so diverse.

Megan: That is super cool that he said that.

Mike: Write that down, Megan.

Megan: He's my new best friend. I don't even know his name but I like him a lot.

Daren: I can't remember it.

Megan: Wow, Daren doesn't even know his name. Okay. Just goes to show doesn't matter who we are, it matters what we say. Okay, so a couple things. Tell us a little bit about like what's going on with the condition of Minnesota prairies. Like what are you finding? Marissa mentioned it a little bit when she said that maybe some of our prairies that are more diverse, they're sort of in this resilient stable state and they maybe don't need as much management. What's the overall trend that we're seeing with GMT? Daren?

Daren: Me? Okay. So one of the things that we found, we have looked at the data and now we have a 11-year dataset and we've been able to in addition to the model that we have, we can also just analyze the data in different ways and from looking at that, the overall condition hasn't changed a lot. It's really not a long time. I mean, that's one of the important things about monitoring and even adaptive management of a complex

system. So you got to be committed to this for a while and so and prairie plants live a long time. So for changes to happen, it's going to take a while to see that. So we haven't seen a lot of changes, yeah, takes patience.

Megan: When you say changes, I just want to clarify. You mean improvements or do you mean change in general, either way, like they're either improving or degrading, declining.

Daren: Yeah. Changes either direction.

Megan: Okay.

Daren: What we have found is that the sites that had been in the GMT project, the lower quality, as Marissa mentioned, those that are lower quality have improved a little bit in the 10 years, small amount but a little bit.

Marissa: It was cover of native vegetation actually has increased.

Daren: Has increased, so the cover of invasive species has decreased a little bit, and the higher quality sites have actually graded in quality. A little bit, not very much, and that was largely, the nice thing is from the protocols that we have and for development of the model, we had these metrics, pretty simple but powerful metrics to kind of tease apart some of this and so for the higher-quality sites, it's really we're seeing an increase in woody vegetation, so woody cover, so that's what really driven down our metric of overall quality. Anything to add to that?

Marissa: No. I mean, I think for me, is I'm not a very patient person sometimes, it's been a good lesson in like 10 years oh, man, we should see big differences, but we see a little bit of change as Daren said and I think in general, maybe what we expect or predicted, but it's a good lesson that patience is important and it takes a long time to change that.

Daren: I mean, it really shows how conventional research, the challenge there. I mean, you're seeing very gradual changes, you're just now starting to see things over 10 years, and so a typical two-year master's project. I think they have to be really careful about the question they're asking, don't they?

Megan: Yeah, that's accurate. Well, and then while you guys are trying to evaluate the impact that this management or no management is having, there's also regular change that's going on too, so are we having a wet year, are we having a dry year, no, we're having a wet year, so that was it. And prairies anyway are always moving through succession as I think everybody knows but I'm always amazed at how different the blooms are each year. Like I get attached to certain species, I have my favorites, I'm not going to lie, and then when I don't see them as prevalent, it's like oh, this is bad, or is it just fine? The prairie is just fine. It's just moving as it normally would where it's responding to the environment, as it has for hundreds of thousands of thousands of years.

Mike: Sara, let's say I'm a, well, actually maybe I'm kind of a prairie manager. I consult on prairie management. Let's just say I am a prairie manager, okay? Boil down your guys' results for me and tell me what lessons I should be learning from your guys' work?

Sara: I think Marissa and Daren hit on the biggest thing is patience, and so we have to have that patience as the people that are coordinating this project and making sure that we're remembering to take these steps like we did when we analyzed the data and looked back at it and have that chance to look over things, but then, also, our managers need to have the patience to remember that it does take prairies a long time to change, and sometimes that's for good or for bad, and I think that's probably the biggest thing that that we've been able to put in it - -

Daren: Don't do a prescribed burn one year and expect it to fix your prairie forever.

Sara: Well, and probably also, I mean, it's related to that patience by having that long timespan view of your prairie, so I mean we all know, right. If you go out and look at a prairie the year that you burn it, it's going to look amazing because all of those flowers and grasses are responding to that disturbance and it's very easy to go out that July and say yeah, did it, and then never look at it again until it's time to burn it again according to your calendar, and so I think that's another good message for our managers is we're looking at these sites over and over and over again and from the metrics that we've chosen to measure, things aren't necessarily changing that dramatically. It's very easy I think to go out and see the flashy forbs that are flowering out there, the nice bright things that many are excited to see. It is exciting to see them but it's also easy to mistake that for the quality of your prairie and miss some of the Kentucky bluegrass or smooth brome, they're just always there in the background and it's easy to overlook them almost, but that's one of the biggest things driving where our prairies are going to go.

Marissa: I just, I think it's amazing we've gotten this far in this podcast. That might be the first time anybody has said Kentucky bluegrass or smooth brome.

Sara: She said it right in the beginning.

Marissa: Because I was like that is one of the major impetus of this project is we haven't been focused on quite as much in our discussion is really reducing the cool season grasses.

Megan: Nonnative cool season grasses. Let's just be clear here. We want you when you're doing prairie reconstructions to put as many native cool season grasses as possible. This is what's going to fight your long-term problem for you, niche against niche. Okay. Just have to throw it in there.

Marissa: Yes.

Megan: And just cool season grasses, native ones super important for your prairie reconstructions.

Mike: Got it.

Megan: So I just want to make that clear so people aren't like oh, Megan's been telling me all the time to plant these things, now these people are saying that I should kill them. What's happening?

Marissa: No. Very specific ones.

Megan: Two very specific nonnative ones. Okay. So before we leave this topic and jump into other things, I went over two last things. So if you wanted, so if you're a land manager and you wanted your grassland to be monitored as part of this, how would you get started, Sara?

Sara: Contact one of the three of us and we'll figure it out, we'll figure it out. It depends very much on the organization or agency. I mean, even among the three of us who is actually the one out there on the ground doing the monitoring and doing the survey protocols. Ideally, somebody from your office would be helping with those. I mean, they're designed to be fairly rapid but it is still time-consuming and it's not our only job, so we are hoping that the fight managers will be involved to some degree, but we have also figured out a lot of creative ways to share resources and make sure that surveys are getting done if people are interested.

Megan: So other people can also volunteer to help monitor some of these sites, like if you're a Farm Bill biologist or somebody who just wants to get more prairie plant knowledge, you could volunteer.

Sara: We do a training session every summer before the field season starts, so that we can kind of calibrate everybody and make sure that they're up to speed on the plants that they need to know to do survey that then also doing the actual protocol.

Daren: Yeah, and one of the things, the protocol is neat because there's three levels, so we can have the deluxe Cadillac version and then the simpler I call the Yugo version. But so for the what feeds into that, the management model only relies on the data that's done from the Yugo version of the protocols, and then but that's like the core data and then you can get more detail doing the Cadillac version, but that takes a lot more. That's where you need to have somebody that can identify all the prairie plants as opposed to the simpler version. There's a select set of indicator plants that need to be identified that need to be recorded, but they're more - - it was chosen both for their importance for indicating the quality of prairie but also for their relative ease and identification, and Sara and Marissa can help you identify those, don't ask me. I will say that this methodology is good for anybody that wants to have a systematic, scientific, rigorous way of valuing their prairie and the responses to management. So even, yeah, contact these three people, you can go online and get this methodology now.

Marissa: We do actually have a website. I haven't looked at it recently. I don't know what's on it.

Megan: We'll have it on our webpage.

Sara: We do have a link on the Fish and Wildlife Service has a public facing site now called ServCat that has our protocols and stuff are loaded on there, so we can get you that.

Mike: I think it's a great protocol for evaluating your prairie and regardless of whether you're actually part of the grass and monitoring team or not. In fact, I think there are people that use this protocol that aren't on the grass and monitoring team.

Marissa: Yeah, and we actually, so we at TNC, we use it on restored sites as well, and I have taken the protocol and developed species lists for our other sites in South Dakota and North Dakota, so that because the core of the protocol doesn't rely on species identification, and so that can be compared on our prairies from east to west across all three states. And then I just developed indicator lists for the different mix cross or different types of prairie systems. So yeah.

Megan: And the nice thing now is you're going to have the Prairie Reconstruction Initiative monitoring protocol, so you can use those in reconstructions. I always think of it is like GMT is my native protocol and then Prairie Reconstruction Initiative is my reconstruction protocol, and the two go together to paint the whole picture of what's going on in the prairie landscape, and now that protocol is done, and so it's going to be out and people can use it, so. Anyway, that was my little commercial there right at the end. All right. Let us jump into our next section.

Megan, Mike, and Jess: (Pre-recorded) LET'S SCIENCE: TO THE LITERATURE! Science!

Megan: Okay. This is the part of the podcast where we recommend a book, a blog, or a paper, or just something else that's great, and we're going to science it up here, so as usual, we asked our guests to have a pick of one of these items and they're kind of going to explain their picks and why they chose them. Daren, let's start with you.

Daren: Well, I already mentioned one that I had chosen. Title of it *Monitoring for Conservation* by James Nichols and Byron Williams. They're from USGS Patuxent Wildlife Research Center. Actually, Nichols has another not a publication, forget where I saw it but it just says monitoring is not enough. Little more direct but I mean, and that just, it just speaks to the importance of having, thinking up front what you're monitoring for. I guess that's the best way to put it is have your questions in place. If you have any hypotheses that you do want to test, what type of monitoring would be the right way. I think one of you has mentioned the paper that kind of goes through some of this process too just to - - is it even monitoring that you need to do or is it research? So it has to fit to the questions that you have at hand. But the one thing I said I don't know that I necessarily agree with in this paper, but it really made me want to partner with the Grassland Monitoring Team is that status trend just not really having preconceived notion of what your status or trend is or will be.

Mike: It's not a specific hypothesis or question.

Daren: Yeah, right. You're just out there surveying the environment in some way and sort of downplays the importance of that. I think we absolutely need to have that as well. I mean, just think about the insect apocalypse and it's been like anecdotal information of insect declines across the world and very few people, there's this collection somewhere and is it somewhere in Scandinavia where they've been collecting insects for over 100 hours and they were able to see just the decline in the abundances. But if we had something set up 100 years ago where we were measuring the abundance of insects and we probably would have seen it 50 years ago instead of starting to say oh, this looks really bad now. So there's a real value just having that information but it doesn't

give you the answers, and then you have to go to the next step of why is that, but first thing is to know that why or that what, I guess.

Megan: It's kind of like here's a good analogy. So like when you're list, you need to know where you are before you can get unlost, like a little bit or else you're just like wandering around hoping that you'll see a town or a person or some friendly helper out there in the woods.

Mike: That works. That analogy kind of works, kind of.

Megan: Well, I'll take it. That was semi-nice from you, so I'll take it.

Daren: If you're lost in a prairie, perhaps.

Megan: Well that's easier to get your way out of.

Daren: Not if it's foggy.

Megan: If it's foggy, it might be a little harder. All right, Sara. Tell us about your pick.

Sara: It's kind of related to Daren's like he mentioned, and it's related a little bit to some of what I was trying to get across before about how until maybe the last 10 or 15 years, we didn't have a lot of great examples of adaptive management being applied to on-the-ground land management. My agency, the Fish and Wildlife Service and the US Geological Survey got together to try to kick off some of these kinds of projects like the Grassland Monitoring Team. They were actually some of the folks that helped us sort of set up some of the original conversations that got this project going. And after they worked on some of those, the folks that were pretty instrumental in getting those workshops kicked off put together a nice little paper just talking about adaptive management in the refuge system but really it could be adaptive management in any land management organization, I think. So it's called *Adaptive Management in the US National Wildlife Refuge System: Science, Management, Partnerships for Conservation Delivery*. And so I think it just gives a nice overview of a few examples of how adaptive management had worked or not worked for us so far and some of the challenges and what it takes to really make it work. And almost not even from a scientific perspective in a lot of cases but the importance of collaboration and the importance of good leadership and support from your organization's leadership, that kind of stuff is built into it too, so.

Mike: Marissa, how about your pick?

Marissa: Yeah, well this is related I guess to my comments about Kentucky bluegrass and brome because yeah, that's I guess one of my motivations for the project is I see them as my archnemesis in life because I walk around the landscape and I see them everywhere.

Mike: You're such a nice person, though. I can't believe you have a nemesis.

Marissa: Yeah, well if I do, it's these two species because the diversity is what I love to see out there. It's one of the things I love about prairies and Kentucky bluegrass is like eating our lunch in so many places. And so the paper I picked is *The Impacts of Kentucky Bluegrass Invasion on Ecological Processes in the Northern Great Plains* by Jeff Prince and John Hendrickson out of North Dakota. And it's a really good kind of

overview for anybody who's not familiar with Kentucky Bluegrass or why you should be concerned about it or this is specifically about Kentucky Bluegrass but there's some other papers out there on smooth brome too. But why you should be concerned about it and why it can be such a nemesis in your prairies to try to deal with, and making sure that we do keep it in check so that we can keep our native diversity out there in the landscape. So yeah, I think it's a good kind of overview and give people an idea of what they're dealing with. But I was also going to say, I think it's kind of funny and interesting that none of us picked our own paper.

Daren: We're too humble.

Sara: We're modest.

((Laughter))

Marissa: So we do have a draft, I guess it's technically not out yet, it's in review. But we could share a draft of it probably. So anyway, we have a paper that we have put together, which describes the first nine years of data and what we've learned and the project and kind of lessons learned and talks about some of the management lessons.

Mike: You can put this on the website then?

Marissa: I think so yeah. I would just put a draft on it in review.

Megan: Yeah, we can definitely do that.

Marissa: So anyway, that would be a very obvious good overview of our project.

Daren: I just wanted to give a shoutout. The paper that Sara had mentioned, some of the authors were involved closely with the GMT but Belinda Knutson, who's now retired but with the Fish and Wildlife Service is so instrumental in making sure these adaptive management projects through the Fish and Wildlife Service and then with partners have been successful with her leadership and just call - -

Marissa: And the paper too.

Daren: And the paper too, yeah. And then when she had us do, you need to have a project record, you need to be recording. We're like oh, okay. We do, you're right, you're right, and she made sure that we recorded our steps along the way.

Megan: She is the mother hen of the whole. That's good, you need those. I'm going to mention last pick because even though I know that we're throwing this in there, even though I know that we're talking about maybe some more rigorous monitoring, even the rapid assessment parts, it's still monitoring is something I feel like that's scary for a lot of land managers because it takes time and to be honest, it's not scary in the way like oh, my gosh, prairie plants are looking at me. It's like scary in the sense of how am I going to possibly do that when I have all of these other things that I'm supposed to be doing for my job as well. There's a real time constraint that we all face in our jobs. So Chris Helzer, we mention him a lot, and so this is, and since Marissa's here, we have to mention him since they worked with The Nature Conservancy, I feel like it's just something that has to happen. So he did this blog post about photo monitoring and I feel like it's a great way to at least see, I'm a very visual person, so I appreciate data

very much and all those things, but what I appreciate even more than just raw data are graphs and pictures, and so he's just talking about how it's really good to set up some time lapse photography if you don't feel like you can do more monitoring or more rigorous things because then you can just kind of get a sense for how your prairie is changing through time. It's something that I really wanted to do with drones as we monitor some of our other more rare habitats that are a little bit inaccessible. It'd be nice to just see like how do frogs encroach into some our wetlands or what is the time lapse for that. Because right now, we're using aerial photography from like the '30s and comparing it to what we have now but having a really nice, crisp photo would just be great to be like, oh, here it is. It's also a really great way when you're doing management to show changes. I think Lisa here in our office had a project where they removed a whole bunch of invasive brush off of a rock outcrop and they did photography before and after, and its magic. Like when you see what it looks like and it's really you can say like oh, you removed this many acres of brush but to see the picture, it was just like oh, wow. They really have changed this entire landscape what it looks like. So I wanted to call a shoutout to that.

Mike: Makes sense. Then the pictures we store in our brains are usually largely inaccurate.

Megan: Yeah. This is like an actual photo, photo monitoring.

Mike: Yeah. Yo Megan.

Megan: Hey Mike.

Mike: Why don't you Take a Hike?

Megan: I think I will, especially because we have such great company today. I love taking a hike with all these fabulous people. No better day to take a hike in a prairie than this day right here. So as we do on this part of the podcast, we want to highlight your public lands. Yes, you are a public landowner, you own so many things, congratulations, so there's so many places that you can explore, you don't need a bus pass, you don't need a ticket, you don't need to be stamped, all you need to do is walk on it because people ya own it. So we're going to highlight some of those picks today, we're going to start with Sara because, I don't know, I just like starting with you. So tell us some places where people can go visit their own prairie.

Sara: I'm not sure if I should feel special or.

Megan: You can feel special.

Sara: The place that I want people to go take a hike is something that we lovingly call the Prairie Complex in central Bigstone County, not too far from Ortonville. And it's we call it the Prairie Complex because it's a complex of several different state and federal public lands and even some conservation easements, where we're working with private landowners on their property to help conserve their prairies as well. So it's prairie waterfall production area, prairie wildlife management area, as you can guess, there's a lot of prairie on both of them, and there are a handful of others in the complex as well. It's a really nice, big, contiguous chunk of land that's protected and I think one of the

things that's really cool about it is that it's not just one agency or one person who made that happen. It's several different agencies working together on purpose in an area that has a lot of value both for prairies but also it's wonderful waterfall habitat. I've had Robert Dana, who is a retired Minnesota DNR employee has done some various butterfly and moth surveys out there in the past and he's told me several times that in all of his travels across Minnesota, he think that's one of the best examples that we have of true prairie pothole, like the landscape, the way the landscape itself looks with the rolling hills and pothole wetlands out there and it's a lot of fun to visit.

Mike: Daren, how about you? How about your choice?

Daren: Well, so hard to pick. First thing I'm going to take a drive, then a hike.

Megan: Cheater.

Daren: Yeah, I don't like to follow the rules. Just the landscape, just to get the feel of what we have of the most intact prairie landscape would be the Aspen Parklands region up in far northwestern Minnesota and extends up into that would be Manitoba. And there's just real great expanses of it's a little different type of prairie, it's brush prairie, there's more trees, there's groves of aspen, there's a lot of wet prairie, lots of mosquitoes, but it's just, I mean, it's really a way to feel like you're immersing yourself into a prairie-like open landscape. And I will say you step out of the car up there. When you step out, the air just is so clean. It feels like when you go up to the north woods and breathe the fresh air, you breathe in the fresh air in the Aspen Parklands. And there's large amulets, there's still some moose, not a lot, but there's also elk, you know, that's a component that's been pretty much the large species, the bison are pretty much gone from the rest of our prairie landscape. Those are there. And the other thing I like is I don't know but the rest of you but I can remember when I first started birding back a long time ago, I won't age myself other than Yugo, driving in the farmland landscape, you would see American kestrels, small falcon, beautiful falcon pretty frequently on the power lines. I don't see them. I don't know about the rest of you but for the most part, I don't see very many of them anymore.

Mike: Definitely not as much as I used to, yep.

Daren: You go up in the Aspen Parklands and they're closer to how I remember it back 40 years ago.

Megan: You said you weren't going to say.

Daren: I know, but I decided I don't care. But if I have, choosing a place, I'm going to go with I call it Tympanuchus. Some others call it Tympanuchus Wildlife Management Area. Potato, potato.

Megan: Wait, which one is right, Tympanuchus?

Daren: Tympanuchus, we can take a vote, Marissa.

Marissa: I say Tympanuchus.

Daren: I'm outvoted.

Megan: You said that Sara knows all the things and she disagrees with.

Daren: I take that back.

Megan: Just delete that part from the podcast.

Daren: It's one that first monitored back in 2009, I think it was and it's a large prairie and there's other ownership around, it's very close to Glacial Ridge National Wildlife Refuge, so that's, it's not quite, it's just south of the Aspen Parklands region, it's on the Glacial, it's on one of the beach ridges of the Little Glacial Agassiz, so it's gravely soil, so less prairie or less has been tilled up for agriculture, so more prairie remains. And there's nice plant communities, high-diversity plants, and also just real high diversity in birds, which is if I have a strong affinity for the bird communities, and I just remember one time I think I've, of all the big interesting I've heard Wilson's phalaropes, I've seen marbled godwits there, there's still. I remember one time there was a marbled godwit, it was like this little dot off in the distance. Is that a marbled godwit, what is that? Well, it was asking the same thing about me, marbled godwits do this often. It comes flying out, circles me three or four times, and goes back to where it was a quarter mile away.

Marissa: I always call them the neighborhood watch patrol.

Sara: And a lectern, the same, yeah.

Daren: I think one of our surveyors doing the bird surveys one year, he had all of the Ammodramus sparrows in one morning and - -

Marissa: Another one of the different genuses.

Daren: Yeah, so. Right. So Nelson's sharptailed sparrow and grasshopper sparrow, what else am I thinking of? And what are the other ones? I'm blanking out.

Megan: Henslow's sparrow.

Daren: Henslow's, there was a Henslow's there. Yeah. Up in Tympanuchus, yes.

Marissa: Did you have any prairie chickens?

Daren: There are prairie chickens there as well. They're actually not on Tympanuchus, they're across the road.

Megan: You keep saying it, it doesn't make it not Tympanuchus. It doesn't matter how many times you say it.

((Laughter))

Daren: I'll stop.

Megan: Marissa, how about you?

Marissa: Well, so I struggle with this but partially because I cover three states and so when I think about hiking on a prairie, I'm often thinking of going west into some of the bigger - big landscapes, big prairie landscapes. But you know, in Minnesota, there are some really nice areas and now that I live in the Fargo-Moorhead area now, and so one, I really appreciate a lot is the complex that's kind of right around Buffalo River State

Park, so it includes the state park, there's also Minnesota State University in Moorhead has a regional science center there, TNC has Bluestone Preserve, which is also a Scientific and Natural Area, and so it's a really nice, it's just a really nice complex, and you can walk around that whole area not even know whose property you're on but with the river and the prairie and there's just the river is nice but the prairie there is really beautiful. I would say that Bluestone makes my heart happy because I see very little Kentucky bluegrass with brome when I walk around to bring it full circle, but it's very high-diversity prairie, it's really nice, beautiful area, and it has a very nice bird diversity as well.

Megan: I love it. I love taking hikes. Oh, I'm sad this has to end but I mean, the podcast doesn't have to end because we're going to have another episode next week on Prairie Tuesday where we are going to get back to our roots with Justin Meissen with the Tallgrass Prairie Center in Iowa. We're going to be digging deep, I mean really, really deep like 14 feet because that's how deep prairie roots go. Woo, amazing. We're going to talk all about it, we're going to learn about it, it's going to be, there's like a whole intricate underground world that makes prairies I think it's maybe even more exciting than what's happening above ground, so we're going to - -

Mike: I know, underappreciated.

Megan: Oh, see what he did there? Underappreciated.

Mike: Yeah, I'm glad you got that.

Megan: As always on today's episode and every episode before this one, you can find all the links for the Take a Hikes and LET'S SCIENCE on our website at mndnr.gov/prairiepod. This episode was produced by the Minnesota Department of Natural Resources Southern Region under the Minnesota Prairie Conservation Partnership. It was edited by Dan Ruiter and engineered by Jed Becher. Oh, my gosh, you guys, thanks so much for being here.

Mike: Yes, thank you. That was awesome.

Daren: Thank you.

Marissa: Thanks for having us.

Mike: It was an honor.

Sara: Lots of fun.

Megan: All right, high fives.

Mike: Okay.

((sounds of birds chirping and wind blowing))