



Prairie Pod Transcript

Season 2, Episode 2: We're in this for the long haul. (Restoration Series: Long-term Management)

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. It's Season Two, all season long and today we are in this for the long haul. We're doing our Restoration Series – Long-term Management of Prairies and Grasslands. Jess, how are you?

Jessica: I'm very well today. It's a beautiful day. The sun's shining. I'm great. How are you doing?

Megan: I'm, you know, I'm all right. We have two really special guests with us today because long-term management is hard, prairies are complex and you know, we like to say, some people say diamonds are forever, we say prairies are forever and so if you do it right, I know, I did that for you Jessica. (Laughing.) So with the right management tool, we can keep them thriving and healthy for so many generations to come and there's so many options that you can use. So, we brought in the big guns today. Jeanine, I'm going to have you introduce yourself and tell us how you are today.

Jeanine: I'm Jeanine Vorland. I'm the Area Wildlife Manager for the Owatonna-Albert Lea area and I'm fair to middlin' today.

Megan: (Laughs.) Joe, how about you?

Joe: Not too bad. Hi, I'm Joe Stangel. I'm the Assistant Regional Wildlife Manager for the southern region and I'm doing all right.

Jessica: Doing all right, southern region of Minnesota. Just clarifying. We're all here in Minnesota today. It's a good, good day to be in Minnesota.

Megan: We'll just jump right in, 'cause this is a huge topic and I want to make sure we have time for all the things we're going to talk about. So we just want to give everybody a quick nitty-gritty background. We did an episode in Season 1 on the beginning, early management, and now we're talking about long-term management. So this is when we

get into years four and five. Prairies are disturbance-based habitats so we need to introduce disturbance into them because without it, prairies can't thrive. They need that. And we need to make sure we're maintaining different successional stages of prairies because in different successional stages, different species are using them. So, prairie management is unique. Let's just go for it. Joe, what is the most challenging thing you face when managing prairies for the long-term, or grasslands?

Joe: You know, it's really a mixed bag, especially when, you know, from my regional perspective, when I look west to east, there are different challenges. Certainly, in the western part of the state, it could be things like, you know, certain types of invasive species. You know, anything from, you know, drier soils, dealing with things like spotted knapweed or on wetter soils, Canada thistle. As you move east in the southern region of Minnesota and you get closer to the forested areas of the state, trees become a real challenge and just natural succession. I would say that [natural succession] is, you know, pretty commonplace across the whole southern region, but as you move east and north, it does become more intense. But there's always succession happening and succession being the natural movement of a grassland to become a shrubland and become, [eventually] a woodland if it's not managed in some way or disturbed, so that's kind of a short answer, I would say.

Jessica: Well, that's a lot of stuff. Thanks for that regional perspective. Jeanine, what do you find in your work area to be the most challenging thing that you face when managing prairies?

Jeanine: Well, it's a little bit of keeping up. You know, it is just, as you said, they're a disturbance-based ecosystem that is hard to get appropriate disturbance at appropriate times, but really we're dealing with small islands of habitat and I will admit I am in the oak savanna part of the, you know, prairie areas and so, you know, a certain amount of trees and shrubs don't really bother me too much, but sometimes you look away and it's [the prairie's] gone. But I also want to say that, you know, really in the last couple of decades the change in climate that we're seeing where we no longer have drought effects the same as we did for generations has really made for a challenge and it's getting much harder keeping up—especially with woody succession.

Megan: Tell me a little bit more about the drought effect, Jeanine. What do you mean that's creating changes? What types of changes?

Jeanine: Yeah. Since over most of my career, we've gone from having, you know, periodic droughts. So it would be actually fairly severe for a year or two, kind of flash droughts that actually were significant enough they would impact woody plant growth and survival and regeneration. Since the early 1990s, though, we're having shorter winters, we're having much wetter periods in summer, which impacts, you know, some of the management you can do. Our shrub component, especially red osier dogwood just loves this new climate regime and, you know, you blink for two years and all of a sudden you lost your opportunity to manage it with fire. You know, it just takes away some of the options and we're certainly seeing much more aggressive woody invasion

with green ash and boxelder, you know, a native species but they're just very difficult to keep up with in a wetter, warmer climate.

Megan: That's a good clarification. Thank you.

Jessica: Yeah. That's something that I don't think about enough. Is climate affecting how we think about these ecosystems now, in the past, and in the future. Certainly, a good reminder. So Joe, talk to us about the three things, your top three things, right? So there's lots of things we could take into consideration when making management choices for the long term. What are your top three that you think about when you're making these decisions?

Joe: You know, when we look at how to manage a prairie, they're all a little different. Back when I used to do a lot of private lands conservation work, I often got the question, you know, how many years, or should we burn our prairie every three years? You know, when should we disturb it? And, human beings kind of want to put things on a schedule. It's just kind of a natural thing. So they want to burn something every third year at a certain time or disturb it in some way and what we find is that one of the challenging things that we need to really think about is not only changing up our disturbance, but changing the time of year we do disturbance. You know, not burning that prairie the same week of the same month of every year or, you know, not haying or mowing or whatever disturbance factor we look at to change up those timings. So that's one of the major things-- kind of the basis of disturbance and then just picking what kind of disturbance you want to use as your tool. And there's a lot of tools that are available. For some private landowners, if they're in a government program, whether it's USDA or a state program, not all those tools are always available to them, so they can be somewhat limited. So if they only do have one tool, say fire, available to them, then really think hard about varying that during their management regimes or when they go in to disturb that prairie. Those are kind of the basics of where I start.

Megan: And Joe, that's both, I like that you said that, varying. We like when things are variable. That's both so that the prairie or grassland looks nice, but also the things living there aren't all burned up all the time.

Joe: Right. Oftentimes, you know, if a manager or a private landowner goes in to burn their prairie, for instance, and it's a little damp when they burn, maybe not, maybe kind of a high humidity day, and the whole thing doesn't, you know, turn black, sometimes they feel disappointment. But that's okay. Prairies, natural prairie fires that happen didn't consume 100% of the fuels. They left thatch, they left wet islands, they left, you know, they didn't burn the rock outcrops and things like that. So that type of management is okay and it will give you different responses after that disturbance.

Megan: I have this idea. I was talking with Troy Dale, who's one of our other assistant area wildlife managers and I have this idea for the wheel of management. Jess knew I was going to talk about this. Where you would just, you would literally have this awesome like gameshow wheel and you would put on it all the different tools that you could do. And unless you're really dealing with something that you want to get ahead of,

say, brome or sweet clove or whatever, all things being equal, you would just say in order to really truly be variable. Because you know, we want to put stuff in that schedule in that box. You're going to spin the wheel. You're going to say I'm looking at this unit of this wildlife management area. I'm spinning the wheel and it would tell you which tool to use, like fire, and then it would tell you what the burn interval is, your return interval, like how many years you're going to wait 'til you come back. Troy thinks I'm nuts, but this is a great idea. Plus we could make it really fancy, it could be these really awesome colors, you know, you'd have some red for fire and you spin it and you're like we're burning, and then if you're going to wait for 15 years or 8 years. I mean, you would put reasonable boundaries around there so you don't get too much shrub encroachment, but this is my idea for how we could be really variable.

Joe: And I would say that Jeanine probably would say that sometimes as wildlife managers, because of our other workloads, we get kind of penned in to certain times of the year and it's hard to ramp up all the time.

Jeanine: Yeah, you baited me into that one. Our biggest, you know, challenge really is resource allocation and I think both private landowners, but especially agency staff, they feel the pressure of accomplishments. So, we like to burn in the spring because it goes poof and it's done in a hurry. Compared with putzing around on a south-facing slope on a low-humidity day in February, you know, trying to get a crew to come over and, you know, spend the day and wow, you got a whole three acres done. You know, we have a lot of competing habitats we're managing for. So do I go, you know, do something with this lake that really needs to happen or do I go back out to a grassland or, you know, even in my case, you know, I really need to burn my oak woods, you know, and but that means maybe I don't burn a grassland that day, so it's how we can allocate our resources with all the other burdens of the job. I think that really does face a lot of agency people.

Megan: So it's quality more than quantity. Go ahead, Jess.

Jessica: Yeah. So I was just going to add that, you know, Megan brought up, making prairies look nice. Chris Helzer has a good blog post about calendar prairies or kind of managing our expectations about what prairies should look like, you know, and this goes along with this conversation of what are we trying to do with our management? What are we trying to achieve? Do we just want our prairies to look nice? Or do we want them to be diverse? Do we want them to be, you know, targeted for a specific use, whether it's a hunter experience or some sort of wildlife response? I think it's, I'm sure you all would agree that we have to decide where our goal is. So how do you decide, Jeanine, maybe you can answer this. How do you decide which management tool to use? If there's no prescription, you know, and we don't have Megan's wheel yet, she's working on it. She's going to get it to us pretty soon. How do you make those decisions?

Jeanine: Some of its just flat-out practicality. You know, what resources you have to work with, you know, and so some of that's just dictated by, you know, the area you're working with, the staff you have, the equipment you have, that sort of thing. But a lot of

it is, I do have, you know, some biases and I'm managing small patches of habitat in a large matrix of corn and soybeans, and there are times that I choose the fact that something needs to live there over should we burn it in the fall and it's gone for winter as far as habitat. So I, you know, consider the matrix that a patch of grass sits in. The other thing is, you know, the hunters are paying the freight on a lot of these and so do I take a wildlife area out of the, basically the public sphere by, you know, an intense disturbance over a large part of it in the fall just when the people want to come out and enjoy it. You know, so there are, there's part of the reason that I burn more in the spring and summer than we do in the fall as just some of the practicality of competing uses for that area. And it's both from my perspective, you know, I'm weighing the habitat value and also the public value of any given area and where are the best alternatives to try and maximize the habitat need when the habitat is the least, you know, and have these areas available for the public.

Megan: And when you say it's the least, you mean there's not much of it.

Jeanine: Yeah. There's no alternative. You know, it's if you don't live on that 40 acres of wildlife management area and you look around the countryside, there isn't another 40 acres of habitat across the road or within an easy, you know, distance for something to either act as a refuge or to act as a different habitat area. You know, and so if it's a large area and a matrix where there's a lot of CRP or Wetland Reserve Program lands, yeah, then maybe the public portion of that isn't so important, but if we're the only game in town, maybe that habitat value of that particular island postage stamp is really very important.

Megan: Right. And rebuilding prairie connections across the landscape is hard, not just in what management tool we're going to use, but how are we going to make those connections, and it's not just about public land. Private land plays a huge role. Many of our private landowners do an awesome job conserving prairie, and so it's about having all of those pieces, and putting those pieces close enough that we create these larger complexes. Joe, I'm going to ask you a question about your different approaches for native prairies versus restorations or reconstructions. But before, I do, just think about it, but at first, while you're thinking, we got to do some definitions. This is a shout-out to Joe Blastick with The Nature Conservancy. He asked us, he said, "I just want y'all to define some terms when you're doing the podcast. Because I just want to understand what you mean when you say certain things so that you know what I mean." Joe. I'm going to go through these just for you. So Jess and I came up with these. We did a lit [scientific literature] search and then we looked at practitioner experience for how people were using these terms because sometimes we use terms in different ways for different reasons, but we sort of pooled all these together and Jess and I came up with how we're at least defining these. So restoration of the prairie landscape is one term. And I apologize, I'm going to read, but I'm going to try to read it pretty. So what we mean by that is we're talking about connecting and enlarging prairie fragments so that we can improve our overall quality and function in the landscape. So that means we're trying, just what we just talked about with Jeanine is that we're trying to make those connections, build those bigger complexes so that we get Jess' favorite word, resilience.

Jessica: I love that word. I absolutely love it. I love this, I love this scale, the scale of which I think most often is this larger landscape scale.

Megan: Yeah. It's the umbrella that basically is going to encapsulate these other things. So restoration of the prairie landscape is going to include all of these other terms that I'm about to go through. So the next one is reconstruction or restoration. So we use these interchangeably. Different people have different definitions for what it means to restore, but pretty much from practitioner experience, when we're talking about reconstructions, we also say sometimes restoration. So what we mean when we say that is that we're rebuilding prairie ecosystems and we're basically planting prairie seeds in areas where they're prior converted to some other land use. So they used to be prairie, now they aren't, and now we're trying to figure out how to build it back. So that's what we mean. Native or remnant prairie, this one's pretty easy. Prairie land that's never been broken by a plow. So it's the holy land. Basically, the biology of that system is magnificent and we are still trying to fully understand it to be able to recreate it. Prairies are complex, so it's hard. So then we have enhancement. So what we're talking about there is we have an existing native prairie, so a remnant, and through management, we're going to improve that so that we get better overall quality and function. Because sometimes it's like what Jeanine was talking about where they're isolated now. And so prairies need more prairies to be more functional. And so they need to have that exchange of plant material, diversity, genetics, the movement of different animals through them, and so that's what we call an enhancement. Management. This one should be pretty commonsense, but these are conservation actions that we're going to take, like burning or grazing or haying or other activities where we're trying to get that overall health and function of the prairies and grasslands up. We're trying to improve it. So that, we could do management on a restoration, we could do management on a remnant. So I just want to throw that out for you, Joe Blastick. So that you know what we're talking about when we're mentioning these terms. So with that in mind, Joe, when you talk about your approach to management for a native prairie or restoration or reconstruction, do you have a different approach for that?

Joe: Yeah, certainly. When thinking about remnant or what we call native prairies, you know, I would just say the touch is a lot lighter. Probably things go through your mind like number one, if I'm going to use equipment on this prairie, where has that equipment been prior? You know, to make sure I'm not dragging in, you know, invasive species or other unwanted plants that you would not want in that you're going in with clean equipment. I'm really going to only use herbicide as a very, very, very last resort. And it just depends on the quality, too. You know, if you know it's never been plowed but the plant community is more introduced, such as like smooth brome or something like that, that you're trying to suppress, you may think about using some chemical in some limited ways, but normally I pretty much try to avoid using herbicides, or if I do, it's in extreme circumstances. You know, maybe there's an invasive that's moved in that I don't want to spread, so it's better to go at it, you know, in kind of a really focused way. And so just in general, I would say it's just a lot lighter touch. I really think through some of the, you

know, harsher management treatments on a remnant versus, you know, reconstruction or a restoration.

Megan: No, that makes sense. And most of the time, we're dealing with a complex of both.

Joe: You are, yeah. And, you know, fire is typically maybe a good way to kind of do a management treatment that you could do both on, both on a restoration and a remnant, if it's a complex. But what we often find with high quality remnants or natives, you know, for one reason or another and it's not very well-understood, they don't typically have a lot of, you know, noxious or invasive weed issues and where we can have that on some of our restorations and reconstructions. So then it gets tricky with the management of the two, especially if they're side-by-side. Some of the thought is, you know, that there's some stability with the plant community that maybe has held out some of those invasives or hasn't seen disturbance for a lot of years. I mean, major disturbance. I'm not talking about a haying or an occasional grazing or light grazing or burning, but you know, so that is something that I have noticed and so, you know, it gives me, you know, I definitely want to go in with a lighter touch.

Megan: I like to say that it all comes down to soil. How your biology is working in that soil, how healthy is it, and the D word, diversity. Diversity matters when it comes to restorations and maintaining resiliency in the prairie landscape. I said it again just for you, Jess. I said resiliency just for you.

Jessica: I wasn't sure what the D word was. I thought you were going to say dirt.

Megan: No. It's soil when it's alive! Come on! Have we learned nothing on the podcast? It's dirt when it's dead. Soil when it's alive!

Jessica: Oh yeah, oh yeah, I'm on board now.

Megan: My goodness. Do you need me to talk about soil again? I'll talk about how good prairie soil smells. It's alive. It smells delicious. That's another D word. But diversity is my favorite one. Go ahead.

Jessica: Delicious. That was really good. I liked that light touch analogy or thought there, Joe. I often wonder, you know, this is real philosophical. I often wonder - - Megan's trying to figure out what I'm trying to say now. You know, what our goal of restoration is or reconstruction. This is, you know, perhaps a topic for another podcast. And we've talked about this in the past as well. Whether or not that goal is kind of mimicking these remnants or not, I don't know where I was thinking about that. I was thinking about what we're doing with our reconstructions and whether or not we manage them differently and I'm just kind of spouting nonsense now. I don't know.

Megan: (Laughing.) Are you going somewhere with this, Jessica?

Jessica: Well, I was thinking about. I was reading this paper, really, is what I was doing and I was thinking about how sometimes our management or maybe it's getting at kind of what Joe was saying about this diversity and resiliency of our native prairies, how you can, you know, they're a little bit more stable. But one of these ideas in the field of restoration ecology of prairies is that we're losing diversity through time in our reconstructions. And maybe that's because we don't, we haven't started with enough, right? And so things get out of balance. But my question is always, you know, is something we're doing management-wise by only burning in the spring on that same week. Is that affecting that diversity? So talk to me a little bit, Jeanine, about what your cycles are when you use fire. So we're going to kind of step through various long-term management techniques that we can use and we're going to start with fire. So, what are your cycles when you use fire as a management tool?

Jeanine: They are broad. For me with fire, I mean, one of the most rewarding things you--in our part of the world-- that you can do is reintroduce fire back to a prairie. And you go from a grassland that was about ankle deep in thatch and, you know, you can find the few forbs out there and maybe some shrubs and you burn it and all of a sudden, it's, you know, there's flowers everywhere, the grasses are up, they're seeding, and, you know, it's everything from the day of the burn you wiped out a whole bunch of ticks and you feel really good about that to, you know, to late summer monarch migration is just spectacular. That's with the prairies that are, they're more or less virgin prairies or haven't been disturbed in a long, long time, so you can bring back that diversity. You can take the red osier dogwood right back down to the ground. You know, some of that stuff. But at other times, there's sometimes we're targeting the woody species. Sometimes, you're just targeting that reset, that get it black, get the sun shining on it, reset the soil microbial [environment] for and other times, it's, you know, like a summer burn or something like that, we might be real specific about a certain plant or woody encroachment. You know, and they really are. It's all over the board. I don't, as Joe was saying, I don't necessarily feel we failed, if we end up with a lot of litter one year, and I don't, I sometimes think we really did it right if we end up with no litter the next year, you know, that kind of thing. And so but again, that's all tempered with the practicality is when can you get the crews together, you know, when can you have the resources to get the burn, you know, and some of that. So, there are times I've failed to meet my burn objective goals just because, you know, the practicality of getting the management done at the right time and the right kind of management, so that does also play a role.

Megan: Joe, same question, grazing.

Joe: Grazing. Grazing. Is a little more complex when it comes to disturbance. So I had the benefit earlier in my career of being part of a team that looked at we were trying to prioritize sites for an easement program that involved a lot of remnant prairie associated with rock outcrops in the Minnesota River. Most of these sites tended to be grazed throughout their career. And the one thing that became real apparent to me after looking at these sites for some time and then, also, learning about grazing history on these is that you can take five sites that had been grazed, and depending on the intensity and the stocking rate and the time of year and how long they were grazed, they had different

plant communities. And it wasn't that all the graze sites had bad plant communities because they didn't. Some had great, some had poor. So it all came down to what that intensity was, how long the herds were out there, and, you know, there's a term in prairie management when you're talking about grazing. There's grazing increasers and grazing decreasers, and this describes how palatable plants are to different grazers. You know, presumably cattle because that's what grazed most of our prairie landscapes in the recent past. And there are some prairie plants, things like narrow leaf, pale purple coneflowers [*Echinacea angustifolia*], leadplants that are really tasty to cattle and they'll pick them out and eat them and they'll continue to eat them. Now, the problem you get into that is okay, if they eat it once, great, but if they're out there all year and they keep eating it every time it regrows in that pasture, that prairie never gets rested, that plant never gets a rest and it just kind of slowly fades away.

Megan: And that will be a decreaser.

Joe: That would be a decreaser, correct. Prairie increasers are things like - - I'm drawing a blank here. Snowberry.

Megan: Gromwell.

Joe: Yeah, gromwell. False gromwell. Snowberry. Those are things that tend to increase when you're grazing mainly because they're not very palatable and they like conditions of possibly, you know, overgrazed short grass conditions. So grazing is a great tool, but it is one that you have to take very special care with not to affect the diversity of the plant community you have out there.

Megan: Contrast that for me with haying because you're still trying to get feed, essentially, out of the grassland or the prairie, so what are your site goals with hay? How might that play a role?

Joe: You know, haying is actually a really great tool. Some of the better remnants I've seen in the Minnesota River Valley especially are hayed prairies, hayed flat prairies. But again, it's just like grazing. If you're haying a particular prairie yearly, haying it really short and continuously haying it, you will eventually turn that very diverse prairie to grasses that love short conditions and can grow under short conditions. Things like Kentucky bluegrass and smooth brome and things like that.

Megan: Nonnatives.

Joe: Nonnatives. So it's real important to change up, just like you would a fire, change up your haying height, leave refugia, you know, so leave patches that you don't hay every year. You know, as wildlife managers, we often take into consideration nesting seasons, you know, for prairie birds. And so those are the kinds of things that you have to take into account when you're talking about haying. The other thing, you know, we've used haying on-- both Jeanine and I have used haying on public lands and so we have some sites that, you know, we don't want to hay an entire site because the public wants

to use that during the hunting season. But at the same time, we need to consider leaving bird refugia, nesting refugia, so we're looking at haying after the primary nesting season, if possible, but again, that variance is an okay thing from time to time also.

Megan: My mom always says to my dad that the definition of insanity is doing the same thing over and over again and expecting a different result. I don't think they're talking about prairies when they're talking about that, but it seems applicable to what we're talking about today.

Jeanine: I would like to, you know, just comment on some of the haying is that our prairies that were used as summer hay [were] usually associated with low ground where people couldn't get in and plow it up that easily for corn or soybean production but they came in and took one crop of hay in July. Those areas persisted to be, you know, really maintained a lot of the diversity and they end up actually as part of our scientific and natural area program nowadays. And I've often noted that when we acquire those lands oftentimes for, you know, our wildlife management areas or something, we go oh, my gosh, you know, we need to save it, you know, and so one of the things we quit doing is that annual summer haying right in the middle of the nesting season for our birds and that's often been to the detriment I think of the diversity and we spend a lot of time trying to catch up with that change in management and, you know, grazing I think is something that if when we're using the analog of how it was grazed and burned, you know, prior to the area being broken up for private land and settlement and crop production and that sort of thing is that I think we can look back, see how those prairies were managed, then yeah, I believe that they really did produce a lot of diversity and, you know, having a, you know, herds of elk out there grazing down your woody species probably were far more effective at keeping the trees out of the prairies than we can be nowadays.

Jessica: Those are some really good points. I agree completely. There's a paper by Matt Dornbush that looks at a prairie in Iowa where it had been historically hayed and then the Iowa DNR took it over and stopped that management technique and just showing how the diversity declined and the composition changed, just like Joe's kind of mentioning with the grazing increasers and decreasers. So, you know, my current thought as you all have echoed is that the more we can vary that management in space and time, the better we're going to have a response from the plants and the critters that inhabit it. The haying has also been a really great tool, a lot of research has shown, for helping out some of our Lepidoptera, our butterflies, very specialist butterflies, so many reasons to use haying as a management tool. Jeanine, talk to us a little bit just real briefly about spraying. You know, whether or not you, you know, how you make that decision because I'm sure it's not a decision that you make lightly. What kind of reasons would you spray? What kind of reasons would you not spray?

Jeanine: I spent the first part of my career trying to be really organic and stay away from chemical applications. It seemed like the right thing. Biocides are biocides, even if they're, you know, targeted for doing the right thing. And I found I was losing the battle and I do use chemical applications. With it kind of goes back to what Joe was saying.

When we have a really, you know, an unplowed prairie, we actually end up with relatively few weed problems and the ones we do have, we try and tackle mostly with physical manipulations, but especially species like buckthorn and boxelders, sometimes it's just best to spray. A lot of our treatment of woody species is actually cut stump or basal bark and so we're not really doing blanket spraying. If we have, you know, really rare or high forb diversity, we'll avoid spraying and try to stick more with mowing or other physical removals. But when you get into our planted grasslands, that's more of a, well, we made it, we can, you know, destroy it. And so we do use more aggressive spraying, especially with species like Queen Anne's lace and wild parsnip and Canada thistle. Again, it's almost all, you know, spot treating populations. We don't just go and cover the whole grassland because we got something we don't like out there. But we do try and tackle the noxious weeds. We probably are more aggressive with spraying there. Our goal is to try and use diversity to end up giving us the resilience. Yeah, I'll use all these words. But, you know, we find that diverse areas are really pretty resistant. We don't have the ecological niches available [for invasive species to invade]. And the other part about managing prairies, you know, we talk about prairie communities existed in a lot of different landscapes, but when we're trying to manage a prairie and what used to be a prairie landscape, that's a whole lot easier than trying to manage a grassland or prairie and something that used to be part of the big woods landscape, you know, and so some of the intensity of management there, you just have to consider, you know, what really is an end community and, you know, is a battle going to be won here, and that'll play into the intensity of managing that grassland as well.

Jessica: That's great. So, both of you have used another term that we didn't really define at the beginning, and that's refugia. And when we talk about refugia, you all used it really in a couple of very, very wonderful ways. We talk about leaving some space, right? Leaving some bits of the prairie that are undisturbed. So if you're burning, you know, maybe you don't want it to be black, right? Or maybe in another year, you do want it to be black, but you only burn a third of it. So the general rule is a third of the site if possible, right? And again, I like to take this landscape approach. If you know if you've got somewhere next door, maybe it's a private land that's being managed for the same species, you know, whether or not they're birds or butterflies or bees or moths or whatever, whatever your pleasure is in terms of the critters that live there, so you could be a little bit more liberal in your use of the disturbance. But you want to leave something, you want to leave a part of it that's undisturbed. And [there's some] really great information, more information about refugia in the DNR's Pollinator Best Management Practices and Habitat Restoration Guidelines that you can check out on our website and it'll give you more information specific to pollinators. We're thinking about these critters that can't move very far when we're talking about refugia.

Megan: Or that can't move at all, right, Jess if it's- -

Jessica: Or that can't move at all.

Megan: - - an egg or in larval form and you're burning when it happens to coincide with that part of their lifecycle, I mean, they're just going to hatch and be like we got to get out of here. It's on fire. It's not how it works, so. Well, it's time for:

Megan and Jess (Pre-recorded): Let's Science! To the Literature!

Megan: Okay, Jess, this is the part of the podcast where we recommend a book, a blog, or paper, and today, which is just appropriate, we're going to talk about things that have to do with long-term management. Take it away, Jessica.

Jessica: Yeah. So we've got a variety of things that have all touched on topics that we've covered today. So, Prairie Ecologist blog, Chris Helzer's blog that we really like to showcase here on the podcast. This particular blog post, the title is 'Choosing Your Destination Before You Choose Your Mode of Transport.' Right? So you're going to want to know where am I going? Am I going to Iowa City? I might drive my car. Am I just going down the road? I might just walk. You want to look at your goals before you decide what management tool, when, and where in time and space that you want to apply. So, there's no one-size-fits-all cookbook. He talks about this idea too. We will wait until we get Megan's wheel of management choices and then we can spin it. We can't, and Jeanine brought this up in parts, too. We can't necessarily rely on historical patterns or attempt to mimic these historical regime because our landscape is so fragmented. The world's really different today. And he talks in there, too, about needing to test these strategies against the outcomes you desire. Our grassland monitoring team is doing a really good job of this, so it's a really great blog post. I encourage you to check it out. The paper that I want to highlight today is by some folks that I've worked with looking at butterfly responses to prairie restoration through fire and grazing. And here, we get this regional term usage of this term restoration in Iowa. That term is used to refer to management. So, these are actually native prairies where they were using fire and grazing, actually bison grazing in this case in the Loess Hills of Iowa to look at butterfly responses. And the take-home message from this paper is really again that we need to diversify management at small spatial scales because different butterfly communities, just like the plants, are responding to different management techniques. So, vary that management in space and time and you're probably going to be pretty good to go. And then the last couple of things that we want to recommend here today are a couple of books. New book by Welby Smith from the Minnesota Biological Survey in the DNR 'Sedges and Rushes of Minnesota,' a really great book. I encourage you to check it out. This way, you can identify those grazing increasers and decreasers, like Joe was talking about. There's also the Prairie Plants of Wisconsin Arboretum that's Megan's favorite book, I believe when she's in the field.

Megan: It is my favorite book. Joe's, too. Joe just pointed at himself, said we're in it together. We're in a boat, me and Joe. We like it.

Jessica: All right. All right. All right. Hey Megan?

Megan: Yeah Jess?

Jessica: Take a hike.

Megan: I think I will. Oh, my gosh. It's such a good day to take a hike, as is every day. So this is the part of the podcast where we are going to highlight some of your amazing public lands. So we talk a lot about wildlife management units or Fish and Wildlife, The Nature Conservancy, all of these different sites, but what you may not realize is that these are part of your land holdings. These are your public lands that we are managing for your benefit, so that way you can go out and have these amazing places to enjoy and we love to do this when we have guests. We force them to choose only one favorite area, which is always really hard for them because they're like, "But I have 29." Then in Jeanine's case, she had 102. So, we made her choose just one. I'm exaggerating a little bit but we'll start with Joe. What's your pick?

Joe: You know, I picked out the Cambria Wildlife Management Area. It's a, you know, a fairly new wildlife management area, but we were fortunate enough to when I worked at the Nicollet Area Wildlife Office to acquire this piece of property and luckily for us, it had a really intact, high-quality, mesic remnant prairie on it. And so it was a real jewel for us to get, a very diverse site, and what we've slowly done out there over probably six, seven years is just slowly by using the plant materials and seed harvest from the site, slowly restore some adjacent land that was either cropland or had been converted into CRP and had been previously cropland. So we kind of got to that point, but it's just a really cool place to go, especially throughout the summertime. Any week, you know, every couple of weeks there's something new blooming in that prairie. We tried to move a lot of those species into the reconstruction portion of the WMA, and we've done a lot of subsequent tree removal and things. And then, also, as part of the WMA, it has a really nice woodland associated with it, too, that's got, you know, hickory in it and oak and so it is one of my favorite WMAs. It's just a really neat place to take a walk, take a hike.

Megan: Take a hike. And we've also got out there some Indian plantain, which is a state threatened species, so we've got a native population of that out there. It's pretty nice. It's really nice. It looks like a big hosta, is what Joe told me, when he saw it.

Joe: Yeah.

Megan: It really does. We were worried that the deer were going to think we were planting them, a food plot of vegetables to eat, but it's a really impressive thing to see and I also like Cambria WMA. Jeanine, how about you? What do you think?

Jeanine: Well, for this purpose, I identified Cartney Slough or Cartney Wildlife Management Area. It's a kind of a long, narrow wildlife area down near Leroy just north of the Iowa border, and it's, when we talked about, you know, what saved the prairie so we could save the prairie, well this was managed as goat pasture for years and years, and so when it was acquired, which is many years ago. It's one of our older wildlife areas. You know, it looked like a lawn. But it had patches of both very diverse prairie. It

had, you know, it's over time, we've acquired croplands that, you know, have been planted prairie. There's areas that were very degraded and that were inteseeded and, you know, worked on. But as Joe said, it's kind of one of those areas you get out in the middle of it and because it's kind of a valley, you can look around and try and close your eyes and take yourself back to when it was a much larger landscape down there and it does have an awful lot of rare species and just is a rare community. You can see lots of fen community too and everything to sandy, rocky soils and so it gives you that aspen parkland feel, too, if you pine for the northern woods. You know, you look around and see what that aspen oak savanna really was and that Leroy, Lake Louise, Cartney Slough area.

Megan: Jess got excited because you talked about the view and Jess likes prairie vistas. That's probably one of her favorite things.

Jeanine: Yeah. If I wanted to plug another one, I'd plug our Prairie Creek [WMA]. That's just because it's large and it has a whole bunch of topography.

Megan: You only get to choose one, Jeanine, not two. This is cheating. You only get one.

Jeanine: Well you brought up vistas and so, you know, go to southern Minnesota. You can actually find a place where you can see a prairie vista, you know, so.

Megan: I love it. As always, you can check all of these, your, public lands out on the DNR's recreation compass. Put that into your Google machine and you can just navigate around there on the map feature. It's mobile, too. You can use it on your phone. If you don't have a smartphone, don't feel bad. You can still get it on the interwebs. And there's also really nice books, booklets, that we produce that show where your public land holdings are. I learned, as I always do, many things. And this is a tough topic for y'all to dig into because it's such a huge topic, and to do it in 45 minutes, we're just scratching the surface. And that's why we say we're in this for the long haul. Jess, did you have fun today?

Jessica: As always, I had fun. I like talking to Jeanine. I like talking to Joe.

Megan: For a second, I thought you were going to say you only liked talking to Jeanine.

Jessica: No. I like talking to both y'all and Megan, as always, it's been great. I learned a bunch. We had our usual themes here on the podcast. Touched on all of them. It's great.

Megan: I know. I enjoyed it. Well, we will catch you next time on the Prairie Pod on Prairie Tuesday, where we're going to be talking with Marty Baker, otherwise known as Martin Baker when he's feeling more professional and serious. We're going to talk about his lifetime dedicated to conservation and prairie work with the U.S. Fish and Wildlife Service. I always love doing these. These are our legacy ones where we're featuring

conservationists and we really get to learn from lots and lots of practitioner experience and we're going to get all the wisdom, you're not going to want to miss it because we're also going to learn some special tales about growing up on a dairy farm. And you're not going to want to miss it for sure. As always, you can find all the resources that we talked about today, including the Take and Hike and the Let's Science on our website at mndnr.gov/prairiepod. We'll catch you all next time.

Joe: See ya.

Jessica: See you later.

Jeanine: Bye, y'all.

((sounds of birds chirping and wind blowing))