Prairie Pod Transcript

Season 2, Episode 6: Bringing Diversity Back, Baby. (Restoration Series: Interseeding)

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 just startled Jeff announcing, 'cause I was so super duper excited. We are already at Episode 6 and we're entitling this episode, Bringing Diversity Back, Baby. So it's coming back and we're going to give you some of the ways that we're going to do that. Jeff stop laughing at me.

Jeff: I'm not laughing. I'm laughing with you.

Megan: Okay good. (Laughing) As long as you're laughing with me. So, I am Megan Benage, I'm a southern region ecologist for the DNR and I'm joined by my fabulous co-host as I am every time - -

Jessica: Jessica Petersen, invertebrate ecologist for the Minnesota Biological Survey, Department of Natural Resources.

Megan: We have two awesome guests today, Jess.

Jessica: Yeah, they're the best.

Megan: They are the best.

Jeff: Who else is in here? There's just me and Curt!

Megan: (Laughing.) Curt, do you want to introduce yourself?

Curt: Now?

Megan: Yeah, right now.

Curt: Well I'm trying to follow this outline. That's down there a ways.

Jeff: Oh we give that up as soon as the taping starts.

(Laughter.)

Curt: Yeah, so I'm Curt Vacek, area wildlife manager with the Minnesota DNR. I work out of the Appleton Wildlife office.

Jeff: And I am Jeff Zajac. I'm the wildlife manager in Redwood Falls.

Megan: Good job. You guys, it's like - -

Jeff: I practiced.

Megan: - - it's like you've done this before, Jeff.

Jeff: Oh, I say it in the mirror every morning so I get it right.

(Laughter)

Megan: It's part of your affirmation. Your daily affirmation.

Jeff: That's right. I'm good enough and gosh darn it people like me.

Curt: Might want to try combing your hair next time too.

Jeff: Oh.

(Laughter.)

Jeff: I don't have enough hair to comb.

Megan: We're already down a rabbit hole; it's going to be a doozey.

Jeff: I see the flag flying.

Megan: Today, we are going to talk about interseeding and I just want to be clear about what this is. This is a practice where we add wildflowers or other missing guilds, so this could be other families that you didn't have in your original seed mix, sedges might be one and we're adding them to already established stands of grass, so already established habitat. Some people call this overseeding, we call it Interseeding, doesn't matter if you you're going inner, over, it's the same to us. Jeff's laughing at me. I'm making hand gestures for inner and over, that's why we're laughing. So how can we bring these lower diversity stands of grass up to a higher level of diversity? Because diversity is where it’s at. I mean, that’s why we’re bringing it back, baby, because the more diverse an area is, the more resilient it is, which means it has a better ability to withstand all the things that are going to be thrown at it, like climate change, drought,

extreme rainfall events, all that stuff, it's got to be more diverse so something lives, and we have really, really awesome restorations. Okay. We're talking about more flowers. More, more, more, more. Jess, will you jump in?

Jessica: Well yeah, I liked how you said you certainly want to add diversity through interseeding, but I also like the idea of making sure, you know, even if you have a super diverse planting, maybe you still have some guilds or groups or families or whatever that you were missing from that. So it doesn't necessarily have to be restricted to super low diversity plantings, although that's typically what we think about. I like the idea of opening it up to thinking about adding in some species that maybe were missed or didn't, you know, I often think about violets, prairie violets and that's a species that gets missed oftentimes for a variety of reasons. So you know, maybe you have a super diverse stand and you want to add that in, so I liked that caveat.

Megan: Jess, why do you like prairie violets?

Jessica: Oh, it's a good question. I like prairie violets because they are the host plant for the prairie endemic regal fritillary, one of my all-time favorite butterflies. If you've not seen this butterfly, it's spectacular. It's like the megafauna of the prairie. I know Curt and Jeff like this butterfly. They watch it puddling on dead frogs on the roadside.

Jeff: It's like the Joe Stangel of butterflies.

Megan: (Laughing.) Jeff said it's like the Joe Stangel of butterflies.

Jessica: Well, that too. I mean.

Megan: I've never seen him puddle, though.

Jessica: Well yeah. I don't think he - -

Jeff: You don't know him very well, do you?

Jessica: - -is consuming dead frogs. But it's a really striking butterfly with the silver spots on the underside and it's one of our last remaining prairie endemic butterflies. We got to make sure we keep it around and one of the ways to do that is to provide its host, the prairie violets.

Megan: When Jess says endemic, she means native to the prairie. It belongs there.

Jessica: Yeah. It doesn't really live anywhere else.

Megan: Yeah, see? So we need it. One more reason why prairies in Minnesota are awesome.

Jessica: Pretty cool.

Curt: Did you want me to elaborate on the dead frogs?

Jessica: Curt has a great story about dead frogs and regal. So if you don't know, a lot of butterflies need nutrients to live. They need these micronutrients and they can get them from fecal pellets. What else are we calling this, poop? What is the appropriate term?

Megan: Just use the word, Jess. Poop.

Jessica: Feces.

Jeff: Excrement.

Megan: Good one.

Jessica: Also, they will suck up kind of salt and things like that from puddles on roadsides or dead frogs.

Curt: Roadkill frogs

Jessica: Roadkill. Yeah roadkill frogs seem to attract regals.

Megan: Nature's recycling.

Jessica: Yeah. They got to get it from somewhere, so that was a good source of nutrients for them, apparently. I would like to know what exactly it is they were getting from the roadkill. It's a whole other podcast.

Megan: Another podcast.

Curt: Whole other podcast.

Megan: So many things are (inaudible). Yeah. So many things to explore. So okay. Before we get into kind of the background on interseeding, I want to give Curt and Jeff the opportunity to talk a little bit about their daily lives and sort of the work that they do. Not, I mean, don't give us like the giant science textbook version, you know, just give us the abbreviated version.

Curt: Sure. So I manage about 80 public wildlife management areas in Big Stone, Swift, and Lac qui Parle counties. Total about 23,000 acres, so responsible for all the habitat management on those WMAs. Also like to help out our partners with fisheries and sometimes ecological and water resources on prairie bank sites, so do some private land work and just provide technical guidance for private lands folks, so it's a whole gamut of wetland management and upland management. And of course, the upland management includes, in my area, a lot of grassland management.

Jessica: Good deal. Jeff?

Jeff: Ditto what he said, except in Brown, Redwood, and Renville Counties. We've got about 65 wildlife areas and a little over 14,000 acres that we're managing there. Almost all of it wetland and grassland. We get bits of forest along Minnesota River and some of the other tribs, but it's mostly upland, grassland, and wetland stuff that we do there.

Megan: And both of you have really interesting and neat features in your landscapes that kind of only occur in those places in Minnesota. The Minnesota River Valley is pretty awesome and neat, and you've got some really rare rock outcrops and calcareous fens and other really cool, amazing habitats.

Jeff: You got some saline wetlands in your area, Curt.

Megan: You, do you, you have a saline lake.

Curt: Yeah. Salt Lake. Salt Lake, it's a really neat birding area. Unique for invertebrates and unfortunately, that's a whole other podcast as well.

Megan: I know.

Jeff: You should get your own podcast.

Megan: We'll call it the Curt Vacek Saline Lake Podcast.

Jeff: Deep thoughts with Mr. Vacek.

Megan: (Laughing.) Well, hopefully, we're going to tap into some of your deep thoughts about interseeding. So okay, we're jumping right into our topic, keeping us all on course. Sometimes we have too much fun, but that's all right. So like we said, when we think about interseeding, it's this idea that you're going to try to improve habitat in some way. Like Jess said, it doesn't have to be necessarily low-diversity, but I think today we're primarily going to focus on how do you get a low-diversity site and bring it up to a higher level of diversity. And we mean, just a reminder, we're talking about diversity. It's not just the number of plants, like the number of species; we're also talking about Jess' favorite term, evenness. So do you just have 20 yellow coneflowers and you have one purple prairie clover? You need to try to get, so you have two species there but they're not very even. So we're trying to work on that level of diversity, too, which goes back into the structure of the prairie. So, we are primarily doing this on restorations I would say. Is that correct? You guys, are you doing it on native prairie, too?

Jeff: We do. I've done it on really degraded stuff. Old pasture where you'll have some natives, but you've got a lot of bluegrass, brown grass, and that's kind of dominating the site but yeah, I've done that a couple of times but it's mostly in seeding, especially older seedings from the '80s and '90s where it was a few varieties of warm season grass and it's been dominated that way for years.

Megan: Well, that's a good point. We do, do that. I think the point I want to make before we go into it is that sometimes when we interseed, it can involve breaking the ground. And if you're going to do that in a remnant prairie, you have to think long and hard prior to breaking it because you can never go back to an unbroken state. And sometimes that might be the best choice for that prairie and other times it's not.

Curt: Yeah. And I would say that if you're going to break that ground, then it's no longer interseeding. You're basically starting over on the reconstruction.

Megan: True. Good caveat points. Okay. Curt.

Curt: Or you can do some mild disturbance and we'll get into that.

Megan: Well, we're going to get into it right now. So what are the types of things that you look at to determine whether or not you're going to use interseeding as a management tool?

Curt: Well, like Jeff, it's not only those warm season grass stands that were just dominantly warm season grasslands, big blue, Indian, switchgrass that don't have any forbs, but it's also those degraded prairie sites where it's kind of - - it's so degraded, you're considering starting over but then you see enough indicator species out there that you're like no, we got to hold on to what we have there.

Megan: What are some of the indicators you look for when you say you see enough indicator species?

Curt: Well, native species. Native forbs especially and - -

Megan: Like leadplant?

Curt: Leadplant, Echinacea, you know, even wild rose.

Jeff: Stiff goldenrod will persist in pastures fairly well. You might have the little bits of prairie clover here and there. Generally, it's the, oh, the things that are resistant to spray and resistant to cattle that are going to be there. Yarrow sticks out a lot then it'll be there. Stiff goldenrod because cows don't like that, either, so.

Curt: Little blue.

Jeff: Yeah. Little blue, sometimes sideoats grama, which will be really common on a grazed pasture because it's got lower growth points than most of the others, so if I can see any natives in the spot I don't think was plowed, I'm generally going to do, I'm not going to start over from scratch on that because when you start, you don't necessarily know what's going to show up, either, as you do management over time. Grazing, burning, different things. I like to burn or graze, do some kind of disturbance to set back

the dominant vegetation. Usually, cool season grass, before I decide what I want to do. I want to see what's able to pop up on its own. But at that point, I mean, it's pretty common. You're not going to get a lot if something's got a really bad disturbance history with grazing or spraying.

Curt: Right. I think give it a test run with a burn and see what kind of response you get before you give up totally and then go from there. But as far as even the old grass plantings we have, I look at the soil types and maybe not the soil itself, just the characteristics of the plants growing there, and I look to see what we doesn't look like there's room for stuff to grow in there.

Megan: Room. Very important.

Curt: Right. I mean, if it's real heavy soil and you have dense planting, those bunch grasses are really dense and you don't have a lot of room in there, I might reconsider interseeding and maybe think about starting over.

Megan: Well, and you're talking about room. I just want to be clear, make this point that there's what we see above ground, and they know this, and you guys know this, but it's below ground, too. Because sometimes I'll see people prep a site for interseeding and they'll just do a burn and they'll be like, oh, I have all this stuff. But you really don't because you still have all that rooting zone that is taken up.

Curt: You got to look at it before the burn, too. And if it's tough to walk through, it's tough. You're not going to have a lot of room for plants in there.

Megan: Because there's way more roots below ground and that's the space that you need to create to make interseeding be successful. It needs space.

Curt: And I also look at roughness of the site. So if we have a lot of gopher mounds, if it's super rough, I might consider starting over on that.

Megan: You mean like uneven, like texturally rough, like oh, you so smooth, right?

Curt: Bumpy. A rough ride.

Jeff: Now was that because you wouldn't want to go in there with no-till equipment or anything like that. I mean, is that for.

Curt: It's for site prep. I mean, you have to burn it. That's not a problem on uneven ground. You have to, if you want to spray it, follow-up spray, follow-up clipping, follow-up haying. All that maintenance down the road. If it's an extremely rough site, uneven site, that stuff's really difficult and in a lot of these cases, I think I depend on neighbors to hay as part of the management, and again, if it's a super rough site.

Jeff: And what time of year do you usually want them to hay?

Curt: It depends on, you know, if it - -

Jeff: You want to time it when you're affecting that dominant grass?

Curt: Well of course, yeah.

Jeff: Yeah.

Curt: Boot stage, but that first season.

Megan: Wait. Boot stage. No, no, no. You're on track, but I want you to explain what boot stage is because some folks may not know what that means.

Curt: Why don't you explain it?

Megan: I want you to explain it.

Curt: So it's when we basically when the warm season grasses shoot up, you get that tall tiller, and then the fluorescence is still in a sleeve, basically.

Megan: Before it's bloomed.

Jeff: Just getting ready to bloom.

Megan: Yeah. Good. I just want to make sure you knew.

Curt: Oh, geez.

Megan: (Laughing) Passing the exam!

Jeff: I've heard it said, so I'm just going to repeat it, yeah. That's how I do it.

Curt: If you don't trust me, I'm just going to walk out right now.

Megan: (Laughing.) Some people may not know what that is, so we're just making sure everybody knows. Okay. Keep going. Keep explaining in depth your reasoning here for when you would hay. Yeah, your timing for when you hay. You say about boot stage.

Curt: I might hay as a site prep. I might hay right after the seeding and do a couple hayings and not worry about stressing those grasses, just worry about opening the structure up for light penetration for those new seedlings. So it might be about the best quality hay. It might not be directly towards damaging those plants. It's towards getting sunlight to those new seedlings. Once those seedlings are established and I might think that those warm seasons or the cool season grasses are starting to dominate again,

then I might try to time the haying to set them back even more or beat them back a little bit more.

Jeff: See I do it similar, I do something similar but I also want to open up space underneath the ground, so I always try to beat on warm season grasses if I'm going to do any interseeding, so when I do haying, I'll try to get guys to hay it right about, guys or gals, hay it right about when the, you know, like I said, when it's in the boot stage, or still flowering, and I usually tell them hay it as low as possible. If they're scalping the ground, that's good. The growing points on those grasses are relatively high, so if you cut below that, they're not going to get a lot of chance to regrow, put more energy in the roots. And then if I can at all, usually I trade them the hay for them doing some tillage for me, and will rip the top of that ground so that we can get the seed in contact with the soil, and also is going to expose a lot of those warm season grass roots to freezing over the winter. So you can knock them back pretty hard. You know, and my experience has always been unless you spray them, you really can't kill them. I've kept them down for two years with tillage and haying but they'll come back, so I don't worry about losing my warm season grass, but I worry more about it being too aggressive, so I like to give the forbs a good at least one growing season, maybe two, so they start to-- start to see some flowering on some of those, so I know that they're relatively well-established. They're strong enough to do that. But yeah, you've got to do something for site prep. Just throwing it on top of grass isn't going to work real well, although I have heard of people they'll use those pocket gopher mounds and they'll interseed on that bare soil. I've tried that. I don't think it works terribly well. Soil's pretty loose but you've got to get - -

Megan: I didn't have very good success with it, either. I tried it.

Jeff: Yeah, you got to - - but you got to get the seed in contact with the soil and I do like disking on that. Again, that's for stuff that we've seeded, not remnant prairie that's been there. The other thing you can try to do to mimic that same thing is to hit it really hard with cattle late summer into early, mid-fall. They'll do a lot of the grazing that the hay - - they'll stress the grass like the haying would have and you can, if you've got enough cattle, they're going to also open up the surface of that soil a little bit because they're going to trample it and the hooves are going to cut into it. But again, they're just hitting the top of the soil, so you're not really damaging a lot that's - - you're not damaging those roots permanently that you're going to kill them on the warm season grass, so. Yeah. Cattle, cattle can be used for that. Haying, burning, disking, all kinds of different things. But I like to just make sure that the grass gets stressed and then we've got open soil to put seed out because I usually broadcast. I don't drill very often for interseeding.

Megan: Why?

Jeff: It's just, I don't know. I mean, you probably can. I just haven't done it. I mean, I've used - - we'll hand-collect seed that we're going to use to interseed and a lot of times, we've got a lot of chaff and stems and garbage that will plug up a drill, and we usually store our seed. We don't go and get it cleaned. We just store it at our facility and then

we'll take it out and we'll broadcast it. Usually with a Vicon spreader. Sometimes we'll do it by hand if it's a small area or if it's steep, so.

Megan: But you don't give yourself enough credit. You do have a reason. It's because you're doing hand harvest and you're not cleaning the seed.

Jeff: You know, I'm not that smart. I don't think very fast.

Curt: I don't think you have to drill with forbs seeds. You're going to get just as much seed contact, soil contact by broadcasting with the forbs if your site prep is done properly and it's much easier than drilling.

Jeff: And you kind of count on freezing and thawing is going to work under the right depth that's there, and some of these really small seeds, they need sunlight to germinate, too, so some of those have to stay on top.

Megan: Well, and you get cold stratification, too, where they go through their dormant cycle, so just in case if you did harvest seed and maybe just hypothetically it wasn't stored in the best case environment, then you're automatically making sure you get through your freeze/thaw cycle.

Curt: And it's a more natural look.

Jeff: Yeah.

Curt: I don't like seeing rows when trying to do prairie reconstruction.

Jeff: Preferably not, but you bring something up, too, Megan, and that's this time of year to do this stuff. You know, you could, if you get a bunch of for both seed and it's not stratified and you try to do this in June, a lot of your seed is not going to germinate till the following year and your grass is going to be recovered, and it won't be as successful as if you did it the fall immediately after you stress the grass. Because again, like you said, it needs to have that cold-moist stratification.

Megan: So you prefer to do yours in the fall.

Jeff: Yes.

Megan: Curt, how about you?

Curt: Fall.

Megan: Fall. Same.

Jeff: Not just prefer. I won't do interseeding if it's in the spring.

Curt: I should back up. Fall or winter or early spring even.

Megan: Give me some - - so we're talking about Southern Minnesota fall, winter, and spring. So just let's talk about some months, so that, because that can vary across the state and I just want to make sure that we put this in context because primarily, we all work in Southern Minnesota and so fall in Northern Minnesota is a little different necessarily than fall in Southern Minnesota. So primarily, what's your ideal fall month? I mean, I know, tell me what the weather is going to do, but.

Jeff: Get a hard freeze, get the soil temperature down below 50 degrees. You don't want it to germinate that fall. That's the biggest thing you want. So any time after a hard freeze, your soil starts to cooldown. Any time from then up until you guess you've still got three or four weeks where it's going to be cold and moist. So probably into, oh, early, mid-March year - -

Megan: Late October probably start.

Jeff: I usually wait until November now because it seems we always get a 70-degree push for two or three days even in November nowadays, so I'll wait.

Curt: Better safe than sorry.

Jeff: Yeah. It's expensive stuff, whether you got to buy it whether you got to put labor into getting it, so yeah. I mean, you're not losing anything by waiting a couple weeks in the fall.

Curt: That's another point is that if you can wait and do it in January and February, that's usually when you can glom to some of the freshest seed, too.

Jeff: If you're buying seed, yeah.

Curt: Right.

Jeff: You know, and then you're playing the game, well, am I going to be able to get out there or am I going to have two feet of snow? Any more it seems like we don't have a lot of that or we get those breaks in the winter where things are mostly thawed and you can get them out there. But if you're further north and you worry about, you know, how much snow are you going to be able to get out there and actually do the seeding in the winter, you know, it's a thing where you want to be able to, you want to be flexible and you want to hit the weather when it's available.

Megan: Good point. I want to talk before we jump to specific site examples, species selection, really quick. So there are some species, and we don't know all of them. This is the same thing like when we talked about rates, where if we had, people always ask Jess and I when we do our restoration trainings, well what's the rate that you know will grow if you seed this at this rate, it will grow. Well, tell me what the weather's going to

do and how much rain we're going to get and I could probably get you a rate that will work. So some of this is guesswork because these are complex communities that we don't know everything about, but the Xerces Society, and we're going to talk about them in our next session, has put together a really nice interseeding guide, really, really nice, and they looked at a lit summary and the practitioner experience and I think Jeff, you actually were one of the - -

Jeff: Yeah, I sent them some stuff. Some of those in there look like stuff that I would have recommended, so.

Megan: So they have a really nice list of species that have been proven, either by practitioner experience or research, tested research, that seem to work better as interseeding modes. And so I encourage you, we'll post that, a link to that on the web when we get all done with the podcast, but I encourage you to take a look at it because it has things like Canada anemone, some of the Zizias, Coreopsis, rose is one, some of the milkweeds like pretty much all of the milkweeds that you're going to use in a restoration: swamp, common, butterfly, whorled. And then they've also got some of my favorites on here, white prairie clover, purple prairie clover, my all-time favorite, and then the echinacea. They have that list has some things that aren't Minnesota native, so you want to kind of look at where the spread is, but quite a few examples of species that may work better for an interseeding. And are you guys still trying to get when you're picking your species, are you looking at what's missing in the current stands that you're trying to rejuvenate and do you stack it heavy to that end? Like we tend to miss early and late, so are you shooting more for those and you skip the middle or how do you build your mix?

Curt: I would say all the cases where I'm interseeding, there's really nothing there for forbs already, so trying to select for everything. Trying to run the gamut of early to late bloomers and short to tall

Megan: Sedges?

Curt: Now looking at sedges. It's fairly recent, though, unfortunately, that, you know, we've kind of overlooked them in the past and not completely but.

Megan: Well, now we all have sedge fever and they're getting the love again. It's a rare disease. Everybody in the DNR has it. Oh, my. Sedge fever. Can't get enough.

Jeff: They have antibiotics for that now.

Curt: Of course, it's based off the soil types, too.

Megan: Right. That's true. And there are, I just want to point out. There are upland sedges, so that's one thing. Jeff, you used two of my favorite. Yeah. There are a lot and you used two of my favorites in almost every seed mix I see that you do.

Jeff: [Carex] bicknellii and brevior which are oh.
Megan: Plains oval sedge.

Jeff: Plains oval sedge, copper shouldered oval sedge. Yeah. And those will run from wet, mesic, up to dry.

Megan: That's why I like them because you can pretty much put them in any, they're very widespread in terms of their distribution and you can put them in almost any seed mix and they are going to grow.

Jeff: Yeah. They establish really well.

Megan: And they're tall.

Jeff: They can be.

Megan: Well, they're taller than you would think a sedge. They're not like, I think of sedges as these little adorable, cute little things that you're just like oh, you're there.

Jeff: If they don't have competition, I've seen them get four feet high, which is big. In a remnant, they're going to be a foot and a half, so-so.

Curt: The question I have on the seeding, though, is what I struggle with is, you know, aim for maybe 20 seeds per square foot on the forbs or try to get a little higher. But I'm wondering if we don't with these interseedings, if we shouldn't be going even higher than that because you're trying to get seed to land on those openings, on those holes, and you might not be doing it with a lighter seeding.

Jeff: In general, the more seed, I don't think you can have too much seed.

Curt: I think you might waste seed by doing that.

Jeff: Well, you do that with a regular seeding anyway. Not everything is going to grow. You know, we don't end up with 20 different species per square foot. So you're going to have some seed that's not going to grow. In nature that's what's going to happen.

Curt: No, but I'm wondering if our target should be more than what we've been using.

Jeff: Oh, I think it should be, yeah.

Megan: Yeah. Because you're also amending something that's been pretty well dominated by grasses and so if you're designing a seed mix right at the beginning, you might be shooting for that 50/50 but now you're working backwards.

Jeff: And the other thing you would like to do, too, is you would like to have some of those things that are hemiparasitic on grasses. Wood betony is one of those, false

toadflax is another. I don't know where you can find any false toadflax seed. I've tried hand-harvesting it. But wood betony grows really well and if you got a more wet site, swamp lousewort--same genus, different soils types.

Megan: What do you mean by hemiparasitic? That sounds bad.

Jeff: Well, they can.

Curt: That's something the doctor told you, you had?

Jeff: No.

Megan: Jessica, help. We're going down a bad road. (Laughing.)

Curt: I'm sorry.

Jeff: Hemiparasitic, they can do their own photosynthesis but they also tap into the roots, especially of grasses to get nutrients from. And they'll weaken those grasses.

Megan: Curt is still giggling. He can't stop. Jess is giggling.

Jessica: That was a good one. That was a good zinger.

Curt: And I'm not giggling with Jeff. I'm giggling at Jeff.

Jeff: At Jeff--that's right.

Megan: We could award points. That was pretty good.

Curt: Sorry, man.

Jeff: We could play the Drew Carey show.

Megan: Oh, now they feel sad about it.

Jessica: Does it work, Jeff? Do you feel like that's a species you can interseed?

Jeff: Oh, yeah. I've had that. That's one species I did just throw some in the grass and it grew and it tends to grow in these little colonies and they spread out and it suppresses the grass within that colony really well. And it's one of those things that flowers early, really good for bumble bees early in the year. I mean, it's right after pasque flowers and that sort of thing, but before golden alexanders, so you're going to get it early to mid-May it's going to be blooming. And it does really well. And I've done it in a number of spots, so very confident.

Megan: Jess, will you tell us a little bit about why those early bloomers are so super-duper important for bumble bees?

Jessica: Well, the bumble bee queens, the new queens overwinter, right, as queens, and but they're all by themselves and they have to build their colony. So they need lots of resources and those early season resources are hard to come by. So anything we can provide for those early season queen bumble bees as they're starting to make their hives for the year is a good thing. Yeah, lousewort's a good one, there's lots of good early season species, and those, I mean, as Curt mentioned, a lot of times the goal is just to get any forbs in there, you know, but I think it's important to remember that there's other opportunities for interseeding and I think maybe Jeff will tell us a little bit about some of his interseeding. I don't know what example he had in mind but I had one in mind for you, Jeff.

Jeff: You tell me what you're thinking of and.

Jessica: Well, I was just thinking about, you know, as I often do think about your Lamberton high diversity planting and how you've.

Jeff: (Inaudible, two speaking at once) high diversity.

Jessica: Yep. How you, I mean, you've got what, over 100 species out there?

Jeff: Almost.

Jessica: Close to 100.

Jeff: We seeded 90 and we probably found 85 out there. Not counting non-native stuff that wandered in on its own.

Megan: Look at how honest he is.

Jessica: Right, you don't want to count that.

Megan: He could've said 100, but he's like, no, no, no, no, no, it's 85.

Jeff: To be honest, most of the time you can usually get away with a whopper once in a while.

Megan: Not with Curt right next to you: fact checker.

Jessica: But there's still stuff missing from that planting that you've been trying to add in, so do you want to talk about that a little bit?

Jeff: Oh, yeah. I mean, we don't have any lilies there. Lily seed is one, hard to find, and two, it takes a long time to establish. We've got wet sites there where you could

probably have Michigan lily and you've got mesic and drier sites where you can have wood lilies there. And those are things I'm looking to add as plugs or bare roots. Also, you know, you mentioned violets and violets, we seeded violet. It did not come there. I was talking to one of our colleagues and, you know, he mentioned the viability of that seed goes down really quick. So if you're buying it commercially, it's going over the whole summer and you're not seeding it until fall/winter, the viability may already be gone out of that seed. It's something where you probably have to harvest it that spring and then interseed it. That's a very hard one to get, but the thing you mentioned, you know, regal fritillaries, that's the only thing that they're going to use are violets, so if we're not providing that, we've got some key species that are not going to respond to that. The other thing I would say, too, for early bloomers is, you know, we need to look at some of our native woody shrubs, plum, prairie, upland willow, things like that because those are going to be some of the earliest things that are going to bloom in the spring, even before some of our flowers, so really early emerging queen bumble bees, they're going to need those shrubs, actually. So we can include those also. Sometimes planting them as bare roots, I've tried experimented with some seeding. It just, it works out better, in my experience, to actually plant bare root plants if you're going to do shrubs. The seeding, it seems like the grasses and the forbs overwhelm the shrubs before they get big enough to amount to anything. I don't know what Megan and Curt, I think they're playing tic-tac-toe here or something on the paper. They're plotting against me.

Megan: No, he's trying to make sure he does a really good job and he was like ah, I want to cover this one section better, so we're just trying to.

Curt: Because we're talking interseeding and I think we seem to be melding prairie reconstruction with, and I wanted to get back to some of the stuff I look for in determining whether or not a site should be a candidate for interseeding and I think it's important for, you know, beginning managers to know.

Megan: Go for it, Curt. Spread the knowledge.

Curt: One thing is, again, I talked about the room, so if you go to that site and the brome itself, it's not a very dense stand of brome within that warm season grass seeding you have. If the brome itself is weak, then you know you kind of have poor soils and to me, it's an indicator that you have room for those flowers. If you go into that stand and you have Kentucky bluegrass and it's a dense mat and you have brome that's dense, reed canary grass that's dense, heavier soils, then it's very difficult to do that interseeding, if you ask me. So I might, that might be where, okay, you start over. Don't even consider wasting your time interseeding. So a lot of the sites that I've had the best luck on are those sandy gravely sites, real poor nutrient, nutrient-poor soils.

Megan: And they're more open anyway. They tend to have more open structure because it's hard to get a dominant stand of something in there because of the nutrient poorness of the soil and just everything else that's going on.

Curt: So if it's a lower, heavy soil, just really dense mat of turf, those are the tough ones.

Jeff: And there's some cases I won't mess with them if there's, if it's really moist and you've got canary grass there, I've never found a way to get rid of canary grass. You can kill plants but there'll be seed in there. That's one where I probably wouldn't even mess with it, as if we've got canary grass. I tried to find a way to pour more water on it and get something else growing, but yeah. If you've got a dense mat of bluegrass, you know, and there are no natives there, yeah, then I would also start over. But if I can find some natives in there, if it's on a site that I don't think has been plowed, I'll probably stick with it and use management to beat down that grass.

Megan: Well, and that's really good. I mean, so we're kind of mixing remnant and restoration together and I just want to caveat again that you, I mean, again, if that remnant prairie has never been broken, that's a pretty serious decision to say okay, I'm going to break it because there are so many biological processes going on in that soil that even though the plant community isn't where we want it to be at or isn't as diverse as we would hope, we can't recreate those processes quickly. And so to lose all that biology in the soil and rebuild it back takes an awful lot of time. And we don't fully understand all of it. So that should be a decision that's really approached with caution if you're going to go backwards.

Jeff: And sometimes, that dominance by those other grasses is just due to the management regime that's been there. If you change the management around to favor more native plants, sometimes you may not see much at all in there to start with. But if you just change the management, you may end up with more native stuff, so yeah. Try management first before looking to interseed those if you got a site that you don't think has been plowed before, even if it's really poor pasture, you might be surprised by what's in there.

Megan: I like surprises. Jess, are you ready?

Jessica: I'm ready.

Megan: Do you think it's time to go there?

Jessica: Sure.

Megan and Jessica together: Let's Science: To the Literature!

Megan: Okay. This is the part of the podcast where we are going to take it back to the literature where we recommend a book, a blog, or a paper, and everything that we've been talking about today, Jess has some good picks. And I think Curt gave us some good picks, too, in here. Way to go, Curt.

Curt: Oh, thank you.

Megan: Jess, do you want to start us off?

Jessica: Yeah. So we got a couple good papers, a blog, and some really great hands-on technical resources. So the first paper I want to highlight today is out of Katherine Yurkonis' lab in North Dakota from 2016. The title is: A Resource-Based Approach to Assessing Interseeding Success in Reconstructed Tallgrass Prairies. So we didn't talk about this with Jeff and Curt too much about monitoring, but it's a super important aspect to interseeding, right? We got to monitor before, we got to monitor after, much like Jeff and Curt were talking about, you got to see what's there, right? To be able to make the decision whether or not you're going to interseed. And then, you know, let's say you make the decision, you're going to want to monitor it after. So these guys tested effects of mowing stimulated by grass clippings, so they were just going through kind of clipping grasses in a plot-based kind of arena with several treatments on interseeding success at these really small plot level scale. So, you know, you have to take those kind of studies with a grain of salt and think about the scale at which we're reconstructing prairies is vastly different than those plots, but it's a good way to learn some information. So regardless of the simulated mowing treatment, which they had a couple and they call it overseeding here but we're kind of referring to it as interseeding, increased the plot level species richness. So didn't matter how many times they mowed or what height where there are different treatments, that mowing increased the plot level richness through interseeding. So they do make the caveat, you know, much like Curt and Jeff have been saying, that mowing may not always be the best strategy. Maybe it's haying or whatever, depending on your site level conditions, but whatever strategy gets you that bare soil is the one you should use. So this second paper, I don't know if you want to talk about it at all, Curt, but it's out of Iowa. It's kind of the seminal paper that people are referring to for a while by Daryl Smith and others and Williams and Jackson from the Tallgrass Prairie Center at the UNI. Effects of Frequent Mowing on Survival and Persistence of Forbs Seeded into a Species-Poor Grassland. So this is kind of what we've been talking about is this kind of traditional way of interseeding. They started with a really old 25-year-old heavy warm season grass dominant planting and they broadcast forbs into a recently burned, so again, they're kind of talking about getting this soil contact, recently burned site and then they mowed it weekly for one or two seasons. And again, light availability was super important, you know. Whatever you can do to get light down to those growing forbs on the ground was good. Is there anything else that stood out for you, Curt, about this paper and what you like about it?

Curt: No. Like you said that was a traditional recipe that we followed with their early interseedings. I don't think we've mowed that frequently but that's kind of a pipe dream for us but - -

Jessica: Kinda workload wise.

Curt: - -Yep and I've got some really good looking sites where I use this recipe.

Jessica: That's great. So the kind of - - we wanted to touch in on this Chris Helzer's blog, again, you know, because we like it, we like the Prairie Ecologist, don't we, Megan?

Megan: We do. We like ecologists.

Jessica: And he's got a good one here from this year called 'It's Working: Evidence of Benefits from Seed Addition into Greater Prairies.' So I really liked this because it's focused on pollinators. You know, I like the pollinators. And what he's doing here is he, again, broadcasting to a recently burned prairie and used grazing. No surprise there. It reduced competition from grasses. And then it doesn't really talk about what all the species list that he interseeded. I assumed that they're forbs for the most part. But he gives a nice list of species that established in these interseedings and then with some help from an entomologist, he kind of gave a little overview of the pollinator benefits that those plants could provide. So it's a really great blog. Curt, did you check it out? We'll put a link on our website. But it's just kind of an update of some of his interseeding activities that he's done and what pollinators might be benefitting from that interseeding into degraded prairie, so those are going. Megan's got a couple. Maybe you want to talk about these guides, there's a BWSR [Board of Water and Soil Resources] guideline for interseeding and there's also we referred to it a little bit the Xerces interseeding guide that's new. Both are really helpful.

Megan: Yeah. I just really like the, I like both of those. The BWSR one is a little bit quicker, quicker overview look into things, just getting started and the Xerces one is really a comprehensive look at all the different methodologies that you can use to interseed and what the research is saying and then what practitioners are saying. And the reason I really like this Xerces one is because it folds those two things together, the practitioner experience and the research, because so often, there are gaps in the research because we just, it's a timing thing. We don't have the time and funding to study all of it and we don't know all the answers, but if you pull those two things together, there's lots of things that practitioners like Jeff and Curt have tried and they know is working for them or not working that can really set the stage. So I love this guide because it pulls all that together and then I think they have some really handy charts in there, that table two of persistent native wildflowers for interseeding. They've got some really good step-by-steps. Like if you're going to do a fall one, then make sure you consider this, this, and this. And so I like that they tried to give you some different recipes for success. Yeah. I like it a lot.

Jessica: It's really long. It's 45-some pages long and really comprehensive. And of course, because it's produced by the Xerces Society, there's a lot of focus on pollinators and how to best practice this for improving pollinators that are visiting your sites.

Megan: And lots of different types of folks contributed. I know Jeff did. I, myself did. Curt, I don't know if you, yes, so lots, I mean, and not just DNR people but like Nature Conservancy, Fish and Wildlife, the gamut of folks. And so I think you're getting a really

good look at everybody working together in the prairie partnership and what's all working for us and how it's going.

Jessica: There's a regal on page 21, so any time, you know, somebody puts my favorite butterfly.

Curt: And it's on a flower, not a frog.

Jessica: It is on a flower. It's on hoary vervain. Yeah.

Jeff: Like Megan mentioned earlier, too. For folks using that, it's for the, I think, Upper Midwest. So there's some species in there that aren't going to be Minnesota native within there.

Megan: Good point.

Jessica: Megan?

Megan: Yeah, Jess?

Jessica: Take a hike.

Megan: I think I will. This is a great day to take a hike because nothing is better than taking a hike than when you have friends to do it with. Jeff, Curt, Jess, let's all go hiking together.

Jeff: As long as you don't tell me to take a long walk off a short pier.

Megan: We don't have any of those in Southern Minnesota. You're in luck. You're safe. We just have, well I guess we do at Swan Lake that little tiny, short pier. JK. We won't tell you to walk off of it. So this is the part of the podcast where we are going to highlight some of your amazing public lands, and as always, you can find the two picks that we're going to talk about today on the DNR's Recreation Compass. Just type in DNR Rec Compass into your Google machine, make sure you're in Minnesota, and it'll pop up a mapping feature where you can navigate to all of these and then you can also search by name. So because we have two guests, when we have two guests, we make them choose one of their faves. It's always hard to pick just one. We know. We limited Jeff since he's a repeat guest on the podcast, we want to make sure he gave us some different places because there's so many amazing things to see in Southern Minnesota and they're yours. So Curt, where are we going?

Curt: I'm going to Hornstein WMA. It's in upper Big Stone County along Big Stone Lake. It's just south of Browns Valley, and so you have that bluff line overlooking Big Stone Lake and you can see across the lake into South Dakota for several miles. You've got hill prairie. You've got oak coulees.

Megan: What's a coulee?

Curt: Coulee Man. No.

Jeff: Is that something you get at Dairy Queen?

Megan: (Laughing.) What are you talking about? What's an oak coulee?

Curt: Ravine. Is coulee an ecological term?

Megan: I think it might be a Minnesota term that I'm not aware of.

Curt: It's a western term.

Jessica: I'm not familiar with it.

Megan: (Laughing. Yeah, that's not a term that I've heard before.

Curt: Western Minnesota.

Jeff: See, where you come from is probably a holler.

Megan: I know, see, now Jeff knows how to talk to me. I know how to listen. A coulee, I just learned that. I thought he was talking about an ice cream sundae.

Curt: Oak ravine.

Jessica: Sounds beautiful.

Megan: It does sound nice. The way you're describing it sounded like you were describing a vista, which is something that Jess really likes.

Jessica: I do like vistas.

Megan: I know you do. As he was talking about looking over the lake, I was oh, will he say the word vista? I hope he does.

Jessica: I think it's an important point to bring up that Curt actually had a hand in Megan and I's friendship because he suggested a particular campsite at Lac qui Parle, where we camped and we had a beautiful vista.

Megan: We did. He did and to be fair, Dave Trauba did, too. They both weighed in on where we should camp, and so they played, together played a vital role in the coming together.

Jeff: So, blame Curt.

Curt: It was just up on the coulee right?

Megan: (Laughing.) That started it all. Jess and I met on the prairie.

Jeff: Wasn't he a rapper in the '90s?

Megan: Coulee…Cool. That's a different guy. (Laughter).

Jessica: There are a significant amount of mosquitos, I should warn you, if you go to this campground, the upper campground. Come 9:00 at night.

Megan: You know when you go home for the holidays and everybody's having a different conversation at once. This is what this is like Jess is still talking about meeting up on the - -

Jessica: 'Cause I'm talking about my vistas. I like my vistas.

Megan: Vistas and when we first met. Who knows what Jeff's talking about?

Jeff: Jeff's talking about Coolio.

Curt: Jeff is, Jeff is talking about Coolio. Jeff is talking about Coolio.

Megan: Curt's talking about coulees.

Curt: I'm talking about John Cole. He's the original coulee man. From Southeast Minnesota. Those are called coulees.

Jessica: Ok. Jeff, why don't you give us your pick?

Megan: Thank you so much for this information.

Megan: Jeff, where are we hiking?

Jeff: We're going to Meadowlark Acres.

Megan: That has a beautiful name.

Jeff: It is. I picked it, so. Yeah. Sounded like one of those subdivisions, so. Anyways, Meadowlark WMA is a small one. It's only 40 acres in size south of Sleepy Eye. Main reason we bought it is because there's a really nice mesic to wet prairie remnant on it, which is roughly 12 acres. That's in the northeast quarter of that 40, right next to the county road, County Road 22. County Road 20 in Brown County. Really neat about it, it's got a lot of really small wetlands, the type that are either full of canary grass and cattails normally or they're completely drained out with tile. These are in really good

shape, a lot of Calamagrostis stricta. We got lots of iris, there's Michigan lily in those, there's bottle gentian, and then as you go up in the more mesic areas, you have a lot of phlox in the spring. I've never seen so much phlox before. It'll turn pink most of that remnant will. And then you get a really good flush of meadow blazingstar in August into early September and it looks really good at that time of year. When we have a good year for monarch butterflies, it'll be full of them. I took my son there when he was four and he called it the monarch restaurant for many years and it really is. It's a great migration stop for monarchs. If you want to see monarchs in the fall, that's a good spot to go.

Megan: I love that you call it the monarch restaurant.

Jeff: My son did. Give him the cred.

Megan: He did it. He's a biologist in training. I also like that you started out with Calamagrostis and then you gave the common names for everything else. Were you just trying to be fancy, you didn't want blue joint to feel like you could say it?

Jeff: It's not blue joint.
Megan: What is it?

Jeff: Well, it's Calamagrostis stricta. You know what it is. Calamagrostis canadensis would be blue joint.

Megan: Oh no, oh no.

Jeff: I beat the ecologist. Yay.

Megan: I was only focused on Calamagrostis. (Laughing.)

Jessica: Not blue joint.

Jeff: That's why I only used it. I usually don't use Latin names.

Jessica: Megan, I think we went there. I think we went to this Meadowlark Acres. Jeff, have you seen meadowlarks there? I just have to ask.

Jeff: I've never seen one. I see lots of boblinks. But see, I named it before we actually bought it, so.

Jessica: Megan, I think we went there. I think we did a pollinator survey there together once.

Megan: Did we do? I think we might have gone there.

Jessica: Yeah, we did, from Jeff's recommendation.

Megan: I'm stalling because I'm looking up Calamagrostis. I can't do it fast enough.

Jessica: I believe it doesn't have a common name. I think Jeff's right.

Megan: That's why you're so fancy. I was trying to hope that it had a common name. We'll give it one. Common names are made up. Doesn't matter. You can call it whatever you want.

Curt: It's gotta have a common name.

Megan: We're going to call it not blue joint.

Jeff: We're going to call it sloughgrass.

Megan: I like it. Sloughgrass.

Jessica: The antithesis of canary grass is what I'm going to call it.

Megan: (Laughing.) Well, it has been fun, as always, on the podcast. I'm super pumped that Jeff and Curt could join us today. You guys made my day better. I just love the camaraderie and the laughter. Jess, you're always so smart and it makes me so happy to get to spend this time with you. Don't laugh. I'm giving you a genuine compliment.

Jessica: Thank you. I appreciate it.

Megan: Okay. Did you have fun today, Jess?

Jessica: I had a great time.

Megan: I know. Me too. And it's not over because we're going to catch you next week on Prairie Tuesday on the Prairie Pod, where we're going to be talking all about monitoring, Jess' favorite topic. So we all know, right, that prairies change through time. That's normal. It's natural. It can be frustrating, especially when you're trying to rebuild them and you have this certain idea of what you want them to look like. So we're going to discuss monitoring techniques that can help you keep better track of how your restorations are changing, what species are the best indicators for health, and some good techniques for adaptive management. We're going to squeeze all that in, into 45 minutes. It'll be a challenge but Jess, you're up for it, right?

Jessica: Oh, yeah. Always.

Megan: Always. I like it. As always, you can check out all of the Take a Hikes that we mentioned today and the Let's Science topics on our website at mndnr.gov/prairiepod. We'll catch you all next time. Bye.

Jessica: Check you later.

Jeff: Peace.

Curt: Mic drop. Bye Jess.

Jeff: Happy trails.

Megan: All right. Catch you next time on the Prairie Pod.

((sounds of birds chirping and wind blowing))