Prairie Pod Podcast Transcript

Episode 7: What you do now, matters later (Restoration Series: Establishment Phase Management)

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

Transcript:

((sounds of birds chirping and wind blowing))

Megan: Welcome back to the Prairie Pod. We are so excited to be here today. Jess, are you excited?

Jess: I'm so excited.

Megan: We always start this way. We always talk about how excited we are.

Jess: We have a wonderful guest today, which is the most exciting part about it.

Megan: I know.

Jeff: ((Dully)) This is my excited voice. ((Laughter))

Megan: We are joined today by Jeff Zajac and his amazing excited voice. Jeff, what do you do for the DNR?

Jeff: Mmm I'm what's called an Area Wildlife Manager. I manage public hunting areas in Brown, Redwood, and Renville Counties. With that I have to do a lot of prairie management including seeding and burning. Doing all the management activities. So, doing whatever Joe Stangel tells me.

Megan: Joe Stangel is his supervisor. One of his bosses.

Jeff: One of my bosses.

Jess: What you been out there on the prairie doing today?

Jeff: We've been picking seed.

Jess: That's pretty awesome.

Jeff: We've been picking veiny pea and bedstraw and lots of showy tick trefoil, which is now all over my pants and shirt because it likes to stick to me.

Jess: You know I have some on me too.

Jeff: Have to get ready for summer burns too so I've been looking at sites to get that ready too.

Megan: I want to know, so when you're picking prairie seeds—we did an episode where we were talking about all the gear you can have and I really want to know, do you have a milk jug belt that you wear to put your seed in?

Jeff: A milk jug belt?

Jess: Yeah, you know lots of milk jugs around a belt and then let's say you're picking veiny pea and you see some phlox and you want to make sure you get that, but you don't want to stick it in your pocket.

Jeff: Is there a secret camera here that is trying to make me laugh at something like that. No, I get a paper bag usually. ((Laughter)). Paper bag or a plastic bucket so maybe I am not as high tech as I should be

Jess: Megan and I are both very envious of the milk jug belt. I want one.

Jeff: I can drink some milk for you if you want.

Jess: I'm going to make one for Megan for Christmas.

Megan: She's giving me one. Wait a minute it was for my birthday. Why are you trying to delay this now?

Jess: Oh Shoot. For your birthday, OK.

Megan: I'm really excited to get my milk jug belt. I requested 5 jugs so that I can be like extra….

Jess: Color Coded.

Megan: You said color coded already.

Jeff: Do you have to win a wrestling match to get one of those? Like the big belts that they wear on WWE?

Megan: I mean I think you just have to be friends with Jess.

Jeff: Oh ho! Ok. ((Laughter))

Jeff: Easy enough.

Megan: That's how it's going to work.

Jess: It is easy enough. I like picking seeds. We can get off this topic now, but I absolutely love it. It's a very addicting process. I was also picking seeds this morning and I couldn't stop.

Megan: See we've had a lot of chocolate today so we are extra ramped up when we're doing the podcast today so I think we'll just give you some apologies ahead of time for those of you listening. We're going to jump in and the reason why Jeff is here is because he does a LOT of restorations and reconstructions.

Jeff: I thought it was because I drew the short straw.

Megan: You did not draw the short straw, Jeff! You always draw the long straw.

Jeff: The long straw? There you go. Anyway.

Megan: So, in today's podcast we're going to talk about establishment phase management. What is that? So, basically all we're covering, just for reference, is basically the moment that you stop planting—whatever planting method you use—ground zero--that moment until 3 years is what we're saying.

Jeff: Usually I get done seeding and I go get coffee. ((Laughter)). It's usually cold out in the fall.

Megan: That's the next thing that happens…

Jeff: You said as soon as the seeding was done! I'm taking it literally.

Megan: Yes, that's good. This is why we like to introduce you to a variety of managers so you can learn different perspectives and get a feel for how we all work a little bit differently. So, we're going to move through the establishment phase and we're going to cover some of the choices you might have and Jeff, if you don't know Jeff, he has some strong opinions about things.

Jeff: No, not me.

Jess: Yes you do.

Megan: Definitely you. About things that he thinks you should do and others things not and we'll try to provide a point and counterpoint. Sound good, Jess?

Jess: That sounds great.

Megan: Sound great, Jeff?

Jeff: Mm that's ok.

Megan: That's ok. I like that you are trying to temper our enthusiasm.

Jeff: Hey, for me this is enthusiastic.

Megan: You're the Eeyore to our Pooh and Piglet.

Jeff: There you go. More like Tigger I would think. Bouncing all over.

Megan: We are definitely that way today. Alright so prairie establishment—jumping in here. This happens like we said from point zero to years 2-3. Usually it can involve some type of mowing or spot-spraying. The goal here is you're trying to figure out how you're going to reduce shade competition and invasive weeds. So, what we want to do is make sure that our natives are always dominant. That's the goal is that we want to make sure we set us up [for success]. In season 2, we'll talk about long-term management. I don't want people to get confused this is not long-term management. So, we're not going to cover the things that you do long-term, years 4-5 and onwards to

make sure you get disturbance into your prairies. As we all know, without disturbance, you don't have a prairie. Jess, why are you looking at me crazy?

Jess: Let's talk about that term disturbance a little bit.

Megan: Oh good.

Jess: What does disturbance mean to you? Because disturbance has a very negative connotation.

Jeff: It's when Brian Shultz takes away my donuts. That's very disturbing to me.

Megan: That is disturbing. ((Laughter)). You don't want to leave donuts around Brian.

Jess: We don't want to disturb the prairie. What do you mean by disturbance? Elaborate on that for me.

Megan: We'll talk about what that means a little bit. So, disturbance in reference to prairies is actually a good thing. What we really mean is we're trying to set-back succession. So, if you don't introduce fire, grazing, mowing, and haying—something into your prairie to try to set back woody encroachment (shrubs and trees that come into the prairie) the prairie is going to turn into a forest. This is just normal succession.

Jeff: you're altering the vegetative composition by altering which ones are able to be competitive. You do different management regimes, you get different competitive advantages for different species.

Megan: Exactly.

Jess: Wonderful.

Megan: Ultimately you want to set it back so you have grasses and forbs. So disturbance is you're keeping the prairie from becoming a forest. We want our prairies to be prairies. Today, I'm going to stop putting my pen in my mouth. Today we're focused on the first few years of your prairie's life. Quick refresher for those of you who may not have listened to our seed mix podcast episode. We want to do a quick refresher here to make sure we're all on the same page. Ok, we don't know what you've done up until this point to establish your prairie so we're going to make some assumptions. Assuming that you have good diversity in your seed mix, we're assuming this. We're assuming that you fulfilled the guilds, that you limited your tallgrasses, you tried to make sure you had restoration conservative species in there, you tried to make sure you had even ratios of forbs and grasses in your seed mix, that you did good site prep. We're assuming that these things happened. That you knew your site and you matched your target community with your site's soils, landform, and topography. And, that you made sure that you did something to boost your soil biology. We always hear this thing about planting into "dead" soil is the way to go. You need to have your biology boosted. You need to make sure you have living roots and things going on to help build good soil biology so you get good prairie establishment. Ok, moving on. We good? We on the same page?

Jess: WI feel like I'm on the same page.

Jeff: I didn't turn the page, but yes, I think we're both understanding what we're talking about.

Megan: Ok, good.

Jess: It's a good overview. We have to assume some level of goodness here because unless you start with goodness what you do next [can be a problem].

Jeff: And unless I disagreed with some of that, this wouldn't be a fun podcast.

Megan: Yes, Exactly. ((Laughter)).

Jeff: I do have some somewhat different ideas about that, but we'll be good enough talking about establishment management. We could spend hours.

Megan: Ok, so now that you have all this goodness like Jess was talking about, now you have to make some choices. You have to make some decisions. I'm just going to say it because those of you who know me and Jeff is nodding right now.

Jeff: I'm rocking in my chair, but it's the same.

Megan: It's the same. I'm a super impatient person. So, when we approach prairies, I think the biggest challenge that we have as land managers and restoration practitioners is to try to be a little more patient when we're trying to decide what to do. I think when we get a little too hasty trying to make sure that things are going to be absolutely perfect right away, we might make not the best choice for the prairie.

Jeff: And it's key to note that nothing is going to be perfect. You can put the same seed mix in the same soil three different years and you're going to get three different results. So, if you go out there with a predetermined [idea] that it has to look like this, you will drive yourself nuts. Because it never does look exactly the same three years in a row. All other things begin equal because you're going to have year-of effects on how it's going to establish. You will get different rain events, different temperatures--all that good stuff. So, you have to be flexible not only patient, but flexible in what it looks like. If you go out there with one expectation and you don't see it then you might be disappointed in something that's going to actually be just fine to meet whatever your objectives are. I know we'll get back to that because I want to comment on the year-of establishment. If I look at these ecologically, when these plants would be reproducing in the wild, a lot of them would be doing it in the presence of annual and biannual competition. They are going to have to grow under a canopy of these other plants. I think some of the things that have happened that really work on restoration is that a lot of this work was done by agronomists. So, it has an agronomy type focus to it. In agronomy, you grow one thing, you get rid of all the competition that's there and you make it the ideal situation for that one particular crop that you're growing. If we're planting these, you're going to have 40-50 or more different plants that are going to be in there [the seed mix]. So, in my opinion shade is not always a bad thing because it can moderate how much moisture loss you get at the soil level. If you have some small seedlings and you have a very dry situation, yes you'll have some competition from roots, but you'll also have that trade-off with less evaporation and less heat effects down on the ground. I actually have not mowed any of my new seedings for the last 6 years. The only time I worry about a seeding is when

you're walking through there and you can't see the ground—you physically can't see the ground because sunlight is not getting there, then you have to not only mow the site, but you should get rid of all the thatch that's there. Which is the other downside of mowing, you're going to leave a lot of vegetation—dead vegetation—on top of these other plants and then you have to deal with that, which will suppress them also. In a lot of cases that's going to take away more sunlight then letting them stand there. I also—folks that know me—I do like the benefits that annual plants have for different species not only game species, but nongame birds that migrate.

Megan: Jeff, I'm stopping you right here because we're getting ahead of ourselves. You're saying a lot of things. And there's a lot of good things, but I want to make sure we back-up and get everybody on the same page.

Jeff: You sound like my second grade teacher.

Megan: I know! It's like, Jeff you're saying all the good things, but let's just go back to 2+2.

Jeff: Just don't sit me in the corner like she did when I was bad.

Megan: Jeff I'm not going to bring up these memories.

Jeff: It's traumatic!

Megan: These traumatic memories that you had from your second grade teacher.

Jeff: And third and fourth. ((Laughter)).

Megan: I'm feeling bad about it already. I'm already feeling bad about it. I want to back-up just a little bit to make sure that we get on the same page here. So, one caveat that I want to say is you mentioned that in agronomic systems a monoculture approach of making the best environment for one plant. I do want to say that, that is just one option in an agronomic system. We're starting to see things with our soil health systems as we move towards trying to mimic.

Jeff: If you're looking at traditional agronomics.

Megan: Right and I just want to make that point that there are other agronomic systems out there that are trying to mimic more of a natural situation and look to things like prairie to figure out how they're doing it and how they're thriving and how they get such good soil organic matter. That's soil health and that's a whole topic for another podcast where we bring Dave Trauba back and talk all about soil health. Just because Dave always wants to be on the podcast.

Jess: That's Megan's favorite topic if you haven't figured it out—it's soil health.

Megan: Well, and seed mixes.

Jess: Jeff's favorite topic is obviously not mowing. ((Laughter)).

Jeff: No.

Megan: So, before we jump into this, Jess you have this great quote here and I want to make sure that you tell us this quote because it kind of gets to the people side of prairie and then we'll jump right back into weeds and then we'll go into mowing.

Jeff: Forbs. They're not weeds—they're forbs.

Megan: That's what we're going to talk about.

Jess: That's exactly what we're going to talk about.

Megan: Aw Jeff: Spoiler Alert!

Jess: So, this quote is from Peter Schramm from 1990 in a paper published in a conference proceedings and the title is: 'Prairie Restoration: A 25 year perspective on establishment and management.' And I pulled this quote out because I just loved it: "Because new prairie plantings look so messy and un-prairie like, this stage gives a bad impression to the uninitiated. This is a time when prairies are growing down, rather than up." This bad impression to the uninitiated to me means, it requires patience and education so that we understand what's happening in the prairie that the roots are going down, that the prairie is working and it just takes time.

Megan: It does take time. It's hard to wait though.

Jeff: For the few that don't like that look, a lot of the mowing comes in and is cosmetic so it will look more uniform, more manicured during that time when people don't like it [the look of the new prairie].

Megan: Let's jump—since you're talking about mowing—let's jump right into mowing and we'll circle back to weeds and talk about them. So, Jeff here's the deal with mowing: to mow or not to mow?

Jeff: to not.

Megan: And if you are Jeff the answer is not to mow. So, let's talk about some of the reasons why you don't like mowing. And what you've seen with your prairies and then we'll do a counterpoint.

Jeff: The main reason I don't like mowing is it's unnecessary. We have a limited number of staff time and equipment available so if we're going to be attacking problems, we should probably be addressing things that are actually problems like noxious weeds. I will have them mow or spray patches of noxious weeds. In most cases, I haven't had any problems with establishment. We have diverse mixtures of plants out on most of these plantings that we've got. And the other big reason I don't like to mow is because those annual forbs like ragweed and lambsquarters are excellent sources of food for migrating songbirds. If you look at the agricultural landscape of 50 years ago before herbicides and today that's one of the main components that's missing for migratory birds. You still have crop out there, but you don't have a diverse mix of annual forbs, which will have different nutrient elements to them than just corn or soybeans. Soybeans in fact have a digestive inhibitor and animals that are eating that aren't going

to get the most value out of that anyway. Those annual weeds have a lot of value on their own and they are excellent for rabbits, deer, pheasants, Dickcissels when they're nesting—they'll use that first-year annual cover. Then you have residual cover the next spring, which is good control for wind erosion. There's a number of reasons I don't like mowing in general. It's a tool, but it's not something I just say yes, you have to do this every time.

Jess: There's no prescription.

Jeff: Yes, it's not a prescription. You have a toolbox. You don't have a specific recipe necessary where you're going to do a, b, c, d. This comes with experience. I've seen these often enough—Randy Markl who was our Area Wildlife Manager out of Windom had gone away from mowing. The Nature Conservancy in Nebraska in a lot of their plantings they've gone away from mowing. Everybody has had excellent results. I just don't think it's necessary and I think it wastes what can be a very valuable habitat in and of itself—that annual weed stage.

Megan: So, you're not just mowing to mow for the sake of mowing. You have a purpose when you're doing it.

Jeff: Well yeah and anything that we're doing management-wise should have a purpose behind it. Because again, you're using resources that you could be using on something else. There's an opportunity cost. If I have them out mowing annual weeds then we can't be out harvesting seed at that same time. I try to figure out what I want my endpoint to be, what are my goals, and then I use whatever tools I need to as I evaluate how the thing is progressing. This helps me figure out if I want to mow, if I want to do any chemical spraying, which I very rarely do anymore—even for thistles. If we do several years of mowing on those thistle, usually native plants will outcompete them to the point that they aren't a problem anymore. There will be thistle occasionally, but we can deal with them on a one-by-one basis. No, I don't do something for the point of doing. It's like prescribed burning—the point of a prescribed burn should not be to make a field black, it should be to control woody vegetation. To set-back or enhance vegetation. You're not going to use a hammer just you use a hammer when you need a saw.

Jess: That was really good.

Megan: I like it. That was a really good quote. Don't use a hammer just to use a hammer. Well, a hammer is so much more fun than a saw. Let's be honest.

Jeff: Not when you're sawing somebody down when they're up in a tree. That could be fun. ((Laughter))

Megan: I hope to goodness you've never actually done that. Oh my gosh.

Jess: Let's talk about weeds.

Megan: Yeah, let's talk about weeds.

Jeff: Or forbs.

Jess: This is just it that I have issues with this term weeds. We talk about it a lot, this term weeds. It's very broad and again like disturbance, it has a negative connotation associated with it. Jeff likes to use the term forbs. Megan tell us a little bit about weeds.

Megan: I still call them weeds because that's the common vernacular for them. That's the language, right, the trade. People know them as weeds, but I like to think of them in categories: noxious weeds, problematic weeds, and I don't really care about you weed. These are my 3 categories. What I mean by that is for noxious weeds we are required to control those through mowing or spraying and we absolutely do that. These are things that are on the Department of Agriculture. They maintain a list of noxious weeds because they create problems in the landscape. We want to make sure that we control those. The second thing when I say problematic weeds—these are things that create aggressive competition with my new baby prairie that I'm trying to grow. My little baby prairie. I want to make sure that I give it the best chance at survival. So, when I have problematic weeds that are super aggressive, for example, sometimes I tend to be a little bit more concerned about giant ragweed as an example. I'm not super concerned about it depending on the situation, but it has a really bug leaf and it can provide a lot of shade. So, it's one that if it's solid that's when I start getting a little more concerned. I'm not concerned if I have a little bit of it in my planting. Problem weeds, things that are very aggressive, they can be clonal or create colonies—things like that.

Jeff: Sweet clover can be an issue. It's something you have to look at. The first year it won't be a problem, but the second year if it's very thick, you're going to have to find a way to deal with it. I rarely find it that thick that I have to deal with it. Although, I do have one planting this year that basically looks like it was seeded. It was already in the seedbank there and it's so thick that next spring we're going to have to get rid of it or we're going to have a solid canopy over the site.

Megan: Right.

Jeff: There are those weeds that if they're going to cause an actual problem for what you're trying to accomplish.

Megan: Especially in that establishment phase when you're prairie is just getting started. You want to give it a boost so it gets the best foot forward. When we say this is a problem weed, I don't want people to panic and be like: "Oh my gosh I have 6 of these in my planting, what do I do?" It's not just about having it, there's an also abundance metric here.

Jeff: They're a weed that can cause a problem.

Megan: Right, they're a weed that can cause a problem and we want to measure that effectively. And the last thing where I just say 'I don't care weed.' There's this great quote from Chris Helzer. We mention him on the podcast all the time and this is in his blog where he talks about weeds on the prairie and changing our perspective. Jeff is

going to like this because it really aligns with his ideology if you will of what you were just saying.

Jeff: my modus operandi.

Megan: your philosophy. How you do life. What he says is: ""Becoming less of a snob about the native status of plants has made my life a little less stressful." This is from his 'Exotic Beauty' blog post. What he's really saying there is that we need to get away from this idea that prairies need to be perfect squares of only natives [prairie species as opposed to native 'weeds']. That's not how they would have historically ever been. There is room for other species in there, right?

Jeff: That aren't all of the long-term perennials.

Megan: Right.

Jeff: Ideally, you'd have all natives. Historically you'd have ragweed and annual sunflower. Even some of the exotic things like lambsquarters aren't terribly competitive. They aren't competitive for long either. After the second year, you won't see any of them. There are some plants where you need to learn to appreciate what they are good for. I don't worry about perceptions too much. What is it actually doing on the site and what is it going to cause?

Megan: We have a purpose for this prairie right? We're trying to make sure we provide homes for wildlife, that we filter water, we're trying to make sure we build soil health… there's all these good things that prairies do for us in part of our connected landscape. So, we want to make sure that we're not over-managing and making choices to the detriment of that prairie long-term. So, I'm going to read this second quote here from Rachel Carson. She says: "Our attitude towards plants is a singularly narrow one. If we see any immediate utility in a plant we foster it. If for any reason we find its presence undesirable or merely a matter of indifference, we may condemn it to destruction forthwith." I just love that because this gets back to the whole thistle debate, which we probably should save as a podcast for another day. It's just like sometimes we have to change our idea of what a prairie is and where our tolerance levels are. I think for me, as I move through my career, I start to become more patient and realize that the prairie is more resilient—even reconstructed prairies—if I give them the tools to succeed, they will come one.

Jeff: I know a lot of remnant prairies that have more quote unquote weeds than seedings because over time they have gotten bluegrass and quackgrass or other things. If you are really obsessive about those, you can do more harm than good by getting rid of them.

Megan: Exactly and we want to first do no harm. That's always the goal.

Jess: Right. That's very important and I think that flipping your script on what a weed is and beauty is in the eye of the beholder. Maybe if we don't know that they're 'weeds', maybe they're beautiful.

Megan: I love your face right now as you're saying maybe they're beautiful. Jess has crazy eyes and she's like maybe they are! If you could see here face, she would convince you.

Jess: This is an extreme example, but purple loosestrife.

Jeff: I was just thinking that.

Jess: They sell it—maybe not anymore--and it started off as a nursery plant. It's beautiful.

Megan: It is. A lot of our invasive weeds are beautiful, but we want to make sure that just because something is beautiful doesn't mean that it has a place in a plant community either.

Jess: True.

Megan: Purple loosestrife wreaks havoc on our wetlands—let's be clear.

Jess: There's balance. That's why I said it's an extreme example.

Megan: Yeah it is.

Jeff: And any plant that doesn't have a natural control mechanism [can be a problem]. We have native plants that are like that now. Red cedar makes a beautiful plant for a windbreak and if you put it in the wrong spot then it's a weed. Things in their right place and if they're not causing damage, are they really worth the time and effort you put in it [control]. You can always put time and effort into something else.

Jess: Jeff, what's your biggest headache when it comes to this establishment phase. What's the thing that give you the most heartburn and keeps you up at night?

Jeff: Actually, nothing keeps me up at night about these.

Megan ((Laughter)) He sleeps like a baby!

Jeff: I'm honest. If you put good seed into contact with good soil, I have never, if you are patient, seen one of these fails. Sometimes they're well0establshed after two years. Sometimes it's 4 or 5, but those plants do establish. So, I really don't worry about establishment. You can wonder what's going to establish itself better in this seeding. Like we said it is going to be different every time, but you're going to end up having a native-dominated site. The only reason you wouldn't is if you have severe infestations of some woody plants like boxelder, ash, cottonwood if you have seed sources near there.

Megan: Sumac.

Jeff: Or if you have wet sites and you have reed canary grass, but you should already be thinking about that ahead of time if that's going to be an issue. On average soil, I don't worry about it establishing. It's a patience thing. If you have patience, it will happen.

Jess: This is why you go out for coffee.

Jeff: Pretty much,

Megan: This is the theme of the podcast, #patience. My aunt would love this if she's listening because I need to work on my patience. Let's talk a little bit about spraying. We talked about mowing, we covered weeds, let's talk about our approach to spraying. I have pretty strong opinions about this. I know you do too, Jeff. I'm going to say my spiel and we can see if we're going to duke it out. If there's going to be an epic podcast battle or not. My deal with spray is that I feel like we often—this is our knee jerk to any invasive weed in the prairie or any nonnative is that we're going to go out and we're going to broadcast spray and we're going to nip it in the bud! I feel like this knee-jerk response is a disservice because anytime you're spraying if you're using a selective herbicide, you are either going to be targeting your grasses or your forbs and you are going to take out the good stuff that you planted. I just feel like we tend to overspray to the detriment of our prairie is because it's a kneejerk response.

Jeff: I get it. It goes back to what were formerly the traditional agronomic way of dealing with a weed. You go out and you find the right chemical and you spray it. Whatever is the most time-efficient is the best answer. Ecologically this is not necessarily the case. You also have to keep in mind that whatever plant you get rid of, you're going to have an open spot there—and what is going to come in and fill that? You also may kill the plant, but there could be seed in the ground. We're taping this in the wonderful New Ulm Reginal HQ and just outside the parking lot is a seeding that has crown vetch and I've seen that crown vetch sprayed probably 5 times in my career and it disappears and it always comes back. If you have a species that you really want to get rid of, you have to think ahead and play chess and think if I get rid of this, what am I going to have on this site? If you have crown vetch then you also will have a lot of nitrogen in the soil so you could have potentially issues with canarygrass or other grass weeds that thrive on that. If it gets wet enough, again more nutrients, for cattails. Spraying, I have a number of reasons that I don't go to spraying as my first thing that I want to do. Herbicide is expensive for one. You have to have staff time to do that and you're going to have all these side casualties of whatever other plants are there. Even the most selective herbicides are going to kill things that you want to keep. Some are going to kill fewer of these things than others.

Megan: So, sometimes it's the right tool and sometimes it's not.

Jeff: That's right.

Megan: You kind of have to evaluate it.

Jeff: Do you want to use a chainsaw when you're making your birdhouse? Probably not. Pick the right tool.

Megan: I think the answer is yes. I always want to use a chainsaw. That is the answer to that question. I'm just kidding, the answer is no. I like what you said…

Jeff: Of course you could have a hockey mask like if it's a movie. Anyways.

Megan: I also want to make sure I follow-up on your crown vetch comment too. We tend to get ourselves into these negative feedback loops. I like what you said about making sure that we think it through ahead of time. So, if you have an idea of what weeds are going to be a problem—this is where when we talked about guilds in the seed mix part, if you don't have cool-seasons, desirable cool-seasons in your mix, you have just set yourself up to fight a lifelong brome battle because you have a negative feedback loop. It doesn't matter how many times you spray or hand pull or whatever [management] choice you're going to make—or graze or whatever, you don't have anything positive in that system. So, you need to set yourself up so you create positive feedback loops where you can generate good competition in your prairie.

Jeff: When we look at guilds that's when we're looking at functionally what they are doing above ground. You have to [also] look at what the root systems are of these also. When you have species that are going to throw down taproots for the most part like Silphiums, they are not going to compete as well against things that have creeping rhizomes, Canada thistle, things like that. That's why I like to be sure when I'm thinking of guilds I want to have things that are going to colonize and fill in open spaces. Things like prairie coreopsis and bedstraw—things like that that are going to do that. You've got to think ahead. In some cases you're going to have to say well I know I have this seed source here and I'm going to have to live with it, but how do I deal with it long-term? If you had crown vetch for any period of time on a piece of ground then you're going to have crown vetch permanently. It's just how much are you going to have based on what management you're going to do. Those species too are ones that are problematic that I would want to spray. If I do have crown vetch, I do want to get rid of that. If I have wild parsnip [too]. Especially if you have a weed that's in a small amount in a local area then you don't want to give it a toe hold. You don't. That's when I would use herbicides if I needed to. Usually that's the third thing. The first option is do nothing if there's no real problem. Second is try to mow and then work on herbicide.

Megan: that's great. There's so many things that we could talk about with establishment phase management. We just dipped our toes in the water today with Jeff. But, I would be remiss if I did not say the thing that Jessica Petersen, formerly known as Jessie, really, really enjoys. And what she really enjoys is keeping records and monitoring changes. Jeff, you're pretty good at keeping records, right?

Jeff: In my head, yes. About the extent that I go with record keeping is I keep a running tab of plants I've seen and what's actually flowered. Roughly, if I think they're abundant, rare, or I've only seen one or two of them. I just kind of keep track of what shows up

there [on site]. I don't take detailed plot measurements like smarter people do. I just do what's easy.

Megan: But we do want you to take detailed records. Jeff actually has fantastic records in his head. You really do. You know every single site, where they are, what you did, and what year you did it in.

Jeff: I've got them in both CD and vinyl.

Megan: But as your previous supervisor said, if you're hit by a bus tomorrow…what did he used to say?

Jeff: Yeah, my old boss used to say, "Well you need to write all this data down because if you get hit by a bus tomorrow then who's going to know this?" And I told him if I get hit by a bus tomorrow then I won't care. ((Laughter)). But, yes it's very important for those who come after us and those who are still learning to learn from our mistakes. I make plenty so, yes there's a lot to learn from me.

Jess: this is one thing that Jeff does really good, he monitors and he does have very good memory. And when we can get him to write it down it's just wonderful.

Megan: It is wonderful. We're going to get him to write it down.

Jeff: beats reading email in the office, I'd rather be out looking for stuff.

Jess: I appreciate you looking at stuff.

Jeff: And it's important for people to go out and look at their seedings. Not only looking for weeds, but you want to figure out based on how much seed you had of a particular species and what [rate] you seeded it on, how is it responding? So, if you want to tweak seed mixes and site preparation later you are getting your own adaptive management going on basically. You're getting a feedback loop of well, this worked and this didn't so as time goes on you evolve what you're doing.

Megan: This leads us right into our next section…

Jess and Megan together: Let's science! To the literature!!!

Jess: Alright, so this is the part of the podcast where we talk about science.

Jeff: I'm geeked now, that was cool.

Jess: Jeff likes science, he really does. ((Laughter)). He's my go to for the science aspects of what we do.

Jeff: Boy that's scary for you then.

Jess: It's not, it's true. You read it and you know you do.

Jeff: I only look at the pictures.

Jess: So, the first book has a lot of pictures that were going to recommend today.

Jeff: And if books don't have pictures, I draw them in the margins.

Jess: ((Laughter)). The title is: "The Ecology and Management of Prairies in the Central United States" by Chris Helzer. This is somebody we obviously admire. This has a section in the book on prairie management. Although it does cover a lot of longer-term management, it covers some establishment phase management too. It has some guidance on management decisions that one might make. So, that's just an overview for you. The second piece that I'd like to bring to the table is a paper by Williams, Jackson, and Smith. It's out of a group from the Tallgrass Prairie Center in Iowa from 2007. The title is: "Effects of frequent mowing on survival and persistence of forbs seeded into a species-poor grassland." Some of the things that I know Jeff thinks about and I think about and Megan when we read the literature are how many species were they planting? Right, are we talking about 100-species planting or are we talking about a 5-species planting?

Jeff: And when were they planted?

Megan: And what rate?

Jess: And where?

Jeff: Mm hmm.

Jess: Right, so this is Iowa—perhaps a little different in parts than in some of the parts of Minnesota.

Jeff: They eat bullheads down there so yeah it's a little different. ((Chuckles))

Jess: So, this was a planting that was established in 1999 in this paper. And there were 23 species of forbs that were broadcast into a recently burned sod at a rate of 350 viable seeds per meter squared. I don't know how that translates to seeds per square foot, Megan, but that's the gist of what's going on here. They monitored it for 25 years. So, they did really frequent mowing of either weekly mowing for one or two growing seasons. So, that's really frequent mowing and what they found was that forbs were twice as abundant in the mowed treatments than in the unmowed treatments. So, perhaps in some cases, frequent mowing could be beneficial.

Jeff: In this case, you're talking about established warm-season grasses not annual competition.

Megan: And that's 10.7 square feet.

Jess: There you go.

Megan: Just for those trying to do the cup to pound conversion.

Jess: It's very low. So, take that for what it's worth. Kind of interesting as one perspective. The last article that I want to bring to the table is a paper that was actually—the study was done in Minnesota. It's about an herbicide, aminopyralid.

Megan: [Correcting pronunciation] Aminopyralid.

Jess: Aminopyralid.

Megan: I know, it's hard to say herbicide names. They are like Latin names.

Jess: They were looking at the effects of aminopyralid on…

Megan: Now you sound really good.

Jeff: That's why they call it Milestone. ((Laughter)).

Jess: So, they were looking at the efficacy of aminopyralid on Canada thistle control.

Megan: You just keep saying it over and over again to get it.

Jess: I know.

Megan: It's like clapping it out. ((Claps hands))

Jeff: They won't let you use it for Scrabble though.

Megan: No, they won't.

Jess: So, they found some really interesting things that may not be surprising and in part is why Jeff—what was the herbicide control, 1, 2 or 3?

Jeff: That was my last. It's the third thing in the toolbox.

Jess: So., they found an increase in grass cover, big bluestem and Indian grass, and a reduction in species richness, evenness, and diversity from this application. So, kind of confirms that using this as your last resort. A couple other things to throw out there: the Prairie Reconstruction Initiative database is a really great resource for this establishment phase, documenting management regimes and management of the establishment phase. [Basically] How it was established. That's a really great resource. And the North Dakota guide that we talked about in a previous podcast, in our last episode, also provides some really good information about establishment. Much like Chris Helzer's book.

Jeff: And for anybody that can travel, the tallgrass restoration network has a meeting every late summer-fall. A lot of TNC folks, a lot of agency people. This year they're meeting near Chicago in the Forest Preserve areas. If you ever get a chance to go, that's a great opportunity to talk to a lot of people from differing backgrounds, differing parts of the Country, and get different perspectives on what establishment and management ideas can be.

Megan: I love that. Because we're learning. Restoration is not a science where we have all the answers because prairies and other habitats that we're trying to restore are so freaking complex.

Jeff: That's a technical word again.

Megan: I know. I used it at our field day the other day, but they are. They are so complicated! I don't know if we'll ever get it the point where we'll have all the answers, but we can get better. And we're going to do that by an exchange of ideas.

Jeff: I said yesterday, we were at a meeting, and if we're not better in 10 years than we are today then we have a problem. We have to keep improving. [We have to] learn stuff.

Jess: We're better now than we were 10 years ago.

Megan: Right, we're working on it.

Jess: Hey Megan.

Megan: Yeah, Jess.

Jess: Take a hike.

Megan: I think I will. It's a great day to take a hike. It's a beautiful day. A beautiful day whenever we talk prairie. This is the part of our podcast where we highlight your amazing public lands where you get to go out and visit ((singing)) prairies. I think every time I'm singing that. I don't know why

Jeff: Can you hit a higher note with that?

Megan: I can't. If I did I would shatter Jessica's glasses. It would be really bad.

Jeff: That'd be cool to see on the radio.

Megan: Well, we would be remiss without—see this on the radio ((giggling)) nice. We would be remiss if during this podcast we did not highlight some of the awesome wildlife management areas that are in Jeff's area. So, he is going to take over and talk a little bit about these first two properties that are your public land.

Jeff: The Lamberton Wildlife Area and the Dutch Charley Creek Wildlife Area. Southeastern Redwood County—approximately 2 miles east from Lamberton on US Hwy 14, it's easy to find. About 2 miles west of Sanborn. You take Hwy 71 down to 14 or you take 14 out of Mankato and just head west. Lamberton area is just shy of 1400 acres. Dutch Charley, which is only a mile south of there, is another 180 acres. There's a big chunk of prairie, grassland there. Lamberton is built around a large wetland complex with a creek, basically a meandering creek running through it with the grassland surrounding it. The western part of the WMA (Wildlife Management Area) is the newer part and that has some of the newer restorations so they've got a lot more forbs in them. They're right next to roads and easy to get to. A great place to go out and just wander around. One of them, which is off of Jade Avenue in Redwood County, if

you look through Explorer [notes], Nicollet ((pronouncing it Ni-co-ley)) or Nicollet as they say where I come from, he reported leaving the Cottonwood River near the mouth of Dutch Charley Creek heading northwest, which gave you this great view of the Buffalo Ridge, which is probably 8-10 miles to the south. Near as I can figure, that hill would've been part of the Wildlife Area. Otherwise you would have had to walk through a bunch of sloughs, which he didn't mention. You can go out on this area, a really diverse prairie planting, and get just a wide-ranging view all the way south to Buffalo Ridge. Lots of wind towers to see now, but apparently was used for scouting buffalo [bison] a long time ago by the folks that Nicollet ran into. So, there's some history and it's also really good prairie to walk around in.

Megan: And that Lamberton Wildlife Management Area right, that's a Legacy tract for us?

Jeff: Some of it is, yes. Probably half that unit was bought with Legacy money. The original piece was bought in the 1960's and we added on to it periodically. Starting after the Legacy Amendment passed in 2008, we started buying additional tracts. Dutch Charley Creek was entirely bought with LSOHC (Lessard-Sams Outdoor Heritage Council) money and the newer tracts on Lamberton were bought with LSOHC money. The restoration and a lot of the management has been paid for by that also.

Jess: And not only is there prairie, but there is a restored savanna on Dutch Charley Creek.

Jeff: It's in the process.

Jess: Right, it's in the process.

Jeff: Basically what we had there is an old prairie reconstruction from the CRP (Conservation Reserve Program) era and we did some interseeding and we also planted some oak trees on there, which at this point are about 8 years old. They're not too impressive yet. This is something that's going to be—take your grandkids there, it will look really nice. That's if your 10 years old now. It's going to be a while, but it's on its way. Bur oak trees with some native grass and forbs in the understory.

Megan: My favorite tree, bur oaks. While you're out there when you are in Brown County you can check out the Cottonwood River Prairie Scientific and Natural Area. This actually has 3 units so it pretty much extends across 3 miles of Brown County. So, they've got 3 management units. They're called the Prairie Champion unit to the west and the Prairie Sky unit to the east and they've got a narrow railroad prairie stretching between them. SO, you can see lots of different kinds of prairie. You can get remnants of dry sand-gravel prairie, you can get wet prairie, mesic prairie, and then a large prairie wetland complex. The ridge part of the unit offers these really amazing, sweeping views and vistas. You can also check out a population of federally threatened, prairie bush clover. Hmm? Hmm? So, that's a rare plant that we have. That's how we talk about rare

plants…Hm? You should see it! It's impressive! ((Laughter) There is a population out there.

Jeff: There's also a really good population of pasqueflowers there so depending on what the management was, how short the grass is, years with short grass are going to be really good pasqueflower blooming on the northwestern unit there at the Cottonwood River.

Megan: We've also got purple coneflower, leadplant, puccoon, blazing stars…

Jeff: It's a decent spot to find upland sandpipers, plenty of meadowlarks out there, which aren't at all common anymore. You might even see Northern Harriers and during migration you will have Short-eared Owls move through there as well.

Megan: Short-eared Owls are my favorite too. Bur oaks and Short-eared Owls, that's what makes my day. ((Snickers)) You laugh, Jessica, but those things are two of my favorite things. Don't make me sing the song, I will do it. As always don't forget to check out the DNR Recreation Compass to find more of your amazing public lands to visit. That's where you can see all of these units that we've talked about today. You are welcome to go out there anytime and wander because they are part of your public heritage. So, next time we're going to catch you on the Prairie Pod where we're going to talk about: Pheasants, Feathers, and Guns. We're going to have the MOST guest speakers that we've ever had, right Jess?

Jess: That's right!

Megan: It has the most! We're going to be joined by Nicole Davros who is the Group Leader for the Farmland Wildlife Population and Research Group and then with her Lindsey Messinger who is the Wildlife Research Biologist and they are going to talk to us a little bit about pheasant research—the status of these wily birds in the State of Minnesota. They are going to be joined by Mike Worland who is one of our Nongame Wildlife Biologists. He's going to talk about grassland birds and he's going to share his prime tip for what you can do to help keep grassland birds on the landscape. You're not going to want to miss it because there's lots of laughs, lots of fun, and as always, lots of really good information. Jeff, thanks so much for being here.

Jeff: It is the highlight of my last 2.5 hours.

((Laughter))

Megan: High praise from Jeff as always. We could expect nothing less from you.

Jeff: Thank you much.

Megan: Jess, it's a pleasure to be here with you too.

Jess: I've enjoyed it. I've learned things as always.

Megan: As always. There's so much to learn. 'Til next time. Bye Jess.

Jess: Check you later.

((sounds of birds chirping and wind blowing))